THE IRON TRADE REVIEW

Registered U. S. Patent Office

Vol. LXVII Cleveland, November 4, 1920 No. 19

Market in Unsettled Condition

Prices and Production Continue To Drop and New Buying Generally Is Light—Many Blast Furnaces Going Out but October Output Is Larger—Coke Slump Extends Further—Mill Pipe Demand of Large Proportions

UNSETTLED price conditions still prevail in iron and steel and this is keeping new buying severely in check. Consumers awaiting the restoration of stability to the market are pursuing a course of holding up the shipment of much tonnage already on the books and are placing new orders very sparingly. Price reductions, some of which are of rather drastic character are inducing the release of comparatively little business and the situation appears to be one of general waiting. Production is undergoing further curtailment in which a contributing cause is the severe car shortage in the Pittsburgh district. Some producers in that territory are facing the worst situation in this respect in recent months, and in cases operations have been forced below 25 per cent the past week.

Many Stacks Going Out

How swift has been the reduction of iron and steel operations during the past week or two can be measured by the record of blast furnace activities at the end of October. The number then was 289 compared with 317 on the corresponding date in September, or a loss of 28 stacks. Yet this decline came so late in the month that it had small effect on the total monthly production which stood at 3,293,543 tons, an increase of 169,235 tons over September, and showed a daily average of 106,243 tons compared with 104,143 tons the previous month. The actual output by the merchant furnaces, however, was on a reduced daily basis.

The bright spot of the situation from a trade standpoint is in tubular goods. Inquiries in the market for line pipe include 41,000 tons from the Prairie Pipe Line Co. and 30,000 tons for export. The tube mills still are overwhelmed with business and are unable to meet all demands, with car shortage an important factor. Contrasting sharply with this condition, is the report covering the plate market which describes the volume of new business at present as the lightest in years. Current inquiry for plates is only about 40 per cent of what it was a month ago and of this but 1 to 2 per cent appears to be live business. A Detroit automobile manufacturer has placed 18,000 tons of black sheets in the Mahoning valley at a reported price around 5.00c, Pittsburgh. Sheet production continues to be reduced because of the loss of tonnage on the books due to suspensions and holdups. After allowing for cancellations, the new bookings in wire products by a Pittsburgh maker amounts to 35 per cent of capacity. Wire has been one of the market's best lines but the demand now is less insistent.

Price Spread Narrows

Finished steel prices from the independent mills continue to work down toward the Steel corporation level. At Chicago, a leading independent is meeting the minimum market basis on plates and structural shapes where the business is desirable. Steel bar business collected recently by a Pittsburgh independent maker in a quick sale drive at 2.35c to fill a mill which was without orders, are placed at about 10,000 tons. This producer again is up to a 3.00c, Pittsburgh basis. The 3.00c price on steel bars now is named by a number of independent producers. This signifies a $5 reduction in the week. Light rails are down $5 to 3.00c, Pittsburgh, with some independent producers.

Coke prices continue their downward course. Sales of spot furnace fuel early this week were made at $9 to $9.50, Connellsville, which represents a further decline of $1.50 to $2 and a net drop of $6.50 to $7 in about 10 days. The main factor in the weakness of coke is the reduced consumption growing out of the shutting down of various blast furnaces.

Iron Market Drooping

The slump in coke prices has tended to make the decline in pig iron more precipitate. In eastern Pennsylvania this week basic has dropped $6 to $8 in line with a similar recession in this grade in the valleys. Valley basic now is being offered by furnace interests at $38.50, furnace, and bessemer and malleable at $42. Foundry iron in the valley is $2 lower with sales at $45, furnace base. This grade is softer in practically all districts. There are reports of quotations below $40 in the South from producers other than the Tennessee Coal, Iron & Railroad Co. Resale iron is dominating the market in several districts but the volume of new sales is small.

THE IRON TRADE REVIEW

Registered U. S. Patent Office

Devoted to the Iron, Steel, Foundry and Metalworking Industries
Published Every Thursday by

THE PENTON PUBLISHING CO., CLEVELAND

Member, Audit Bureau of Circulation and Associated Business Papers, Inc.

BRANCH OFFICES

CHICAGO - - - - - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - - - 501-505 Commercial Tribune Bldg.
NEW YORK - - - - - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - - - - 2148-49 Oliver Bldg.
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BIRMINGHAM, ENG. - - - - - - - - - Prince's Chambers
LONDON, ENG. - - - - - - 2-4 Caxton House, Westminster, S. W. 1.

Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $5 per year. Canada $7.50 and other Foreign Countries, $10 per year.
Entered at the Postoffice at Cleveland as Second Class Matter

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Much Railroad Business Promised

EXPRESSED by a few machine tool and equipment sellers recently, the opinion that railroads under private ownership and management are more conservative in their machinery purchases than when under government control is open to question. It is well known that railroad car and locomotive shops under federal management were allowed to get so low from an efficiency standpoint, that they are having difficulty in recovering. Employes of one of the largest railroad systems in the Middle West have stated that when machine tools broke down under government supervision, they would not be repaired but were allowed to remain idle. This practice became so general that in addition to the accumulation of obsolete machinery dumped back on the private owners with the cessation of national control, a vast number of machines could not be utilized because of needed repairs. This was one of the many problems which confronted the private corporations and the past several months have been spent in endeavoring to repair those machines that could be reclaimed, in cleaning house, and in making such minor purchases as limited funds would permit.

Machinery sellers have only to recall the months when the government was handling the transportation systems and the comparatively few machinery lists issued and then line them up with the numerous lists that were put out shortly after federal control ceased. While it is true that purchases relatively have been few, a huge underlying need exists as shown by the numerous inquiries which now are inactive, and it requires only the acquisition of funds to bring to a head a huge buying movement on the part of railroads.

Opinions differ as to when this will occur but the increased revenues now being realized by the transportation interests should be helpful to the machine tool and equipment situation. If developed soon, this potential railroad demand will furnish a splendid business for the usually quiet winter months.

In all this discussion, however, cognizance must be taken of the fact the transportation interests today are abreast of or in some instances a little in advance of the industrial procession. Any extended period of industrial inactivity, therefore, will but give further opportunity to the railroads to withdraw from the market, to repair rolling stock, etc., and will tend to make present equipment more adequate to the demand. It must be remembered too, that in the first month of increased revenues and freight rates, some roads did not make their operating expenses. As has been pointed out in these columns, it will be some time, however, before the full effects of the increased freight rates are felt by the carriers.

The question of railroad buying finally simmers down to one of financial ability to pay for what everyone concedes to be badly needed and the desire or inclination to be economical or conservative really has little to do with it. Until the determining factor is settled the machinery industry at least will be able to take encouragement from the thought that those needs will be large when they do come.

Brass Mill Industry Retrenches

THE brass rolling mill industry, which was among the first in America to feel the foreign demand for munitions early in the war, now is among the first of the metal trades to feel the pinch of business inactivity, to a point of reducing wages. A Waterbury, Conn., mill recently reduced wages and salaries 10 per cent and returned to a basic 10-hour day, instead of the 8-hour day with time and a half for overtime. Some of the other large brass mills while not cutting wages, have returned to the 10-hour day and all through the industry this policy is becoming manifest.

Common labor in the Waterbury mills went on strike in April and remained out for about three months, during a period of much activity in the industry. About the time the men returned to work, defeated, automobile building and accessory companies began canceling orders and a huge backlog of unfilled business held by the mills during the strike began to

dwindle. More recently, the mills have begun to get low on orders and have slowed down operations.

The present wage reductions have followed sharp cuts in the prices of brass and copper products. Western brass mills, which have been even more dependent upon automobile business than the New England plants, also have been more in need of orders and a keenly competitive condition exists.

Tool Designers Are Busy

CONSIDERING the present inactive condition of the machine tool market, it might be expected that machinery builders would curtail the development of new tools and accessories or at least postpone this work until the future of the market assumes more definite shape. However, a careful study of the late offerings of many toolbuilders reveals no indication that there is a let down in the efforts of manufacturers to constantly improve their lines of products. In fact during the past six months new machines have been announced with more than usual frequency, indicating that the volume of immediate business on the books of manufacturers has little if any influence on the activities of the engineering departments.

There can be no question that designers of machinery are profiting from the experiences of the war. Many specially designed tools created several years ago under stress, are now being redesigned and improved. The most noticeable feature of this remodeling process is the tendency to adapt old types to semiautomatic operation. This is accomplished on boring mills, milling machines and similar tools by providing rotating tables with from four to eight chucks so that the work may pass from one set of cutters to another for the various operations. For duplicate work, these machines greatly increase the output per man and in some instances it is possible for one operator to handle more than one machine.

Improvement also is noted in the design of lathes and drill presses. One important departure from conventional design is the regrouping of the driving motor and gear train so that the number of gears and shafts is reduced and the power is delivered to the spindle with less friction loss than in some of the older types of machines. The methods of chucking work also are receiving attention, the designers evidently realizing that the time spent in putting work in and taking it out of a machine can be reduced in some instances. Magnetic chucks and air operated chucks appear on several new machines.

In order to keep pace with the changes made in the design of the moving parts of machines, the structural details are being altered. The modern trend has been toward heavier and more powerful tools, necessitating heavier beds and frames. In several cases, almost revolutionary features have been introduced in the effort to redistribute stresses in machine tools so as to avoid adding excessive weight and size to certain parts. The demand for stronger castings also has been met to some extent by better foundry practice, which has enabled toolbuilders to keep down weight without loss of strength.

The effort of toolbuilders to keep abreast of the requirements of their patrons is an encouraging sign. Not only does it reflect confidence in the substantial strength of the machinery industry, but it evidences a spirit of progressiveness that will go far toward meeting and anticipating the needs of the users of machine tools. The knowledge that the builders are constantly striving to improve their products should reassure prospective purchasers that when they again enter the market, they will find a great variety of better tools than have been offered before.

Competition Spurs Labor

NEVER in the history of the United States was a labor shortage as pronounced as during the war. Labor was at a premium. This resulted in a gradual reduction in efficiency all along the line so that at the close of hostilities, labor was generally considered less than 50 per cent as efficient as it was in prewar days. Now that the country has turned its attention to the pursuits of peace industrial efficiency is on the increase. The reason for this is readily apparent. Jobs are not as plentiful as they were; consequently men are competing with each other in the labor market.

During the war, when efficiency was not essential in holding a job, it was a simple matter for good, bad or indifferent workmen to be retained on the payroll. Today the situation is different; a just return for compensation received is demanded.

The older mechanics, many of whom laxed their efforts slightly during the war, now are willingly speeding up production. Men 45 years of age and older can recall from practical experience the dark days following the business depressions of 1893 and 1907, when a man had to be an expert mechanic to hold a job, and, further, he had to do a fair day's work. The industrial slacker was let out for the reason that scores of efficient men could be had for the asking to fill his place.

But a new state of affairs confronts the mechanics who were not employed in industry previous to the war. Their initial training took place at a time when efficiency was almost unknown. Now that efficient manufacturing standards are being demanded, they must adapt themselves to the changing circumstances under which they are employed. This country perhaps will never pass through dark industrial years such as followed the business depressions before mentioned, but the lesson that the individual mechanic must be an efficient worker to remain on the payroll is slowly but surely becoming more evident every day. Competition exerts a powerful influence, and in the case of labor, it determines more effectively than any other force what constitutes an honest day's work.

Iron and Steel Prices

CORRECTED TO WEDNESDAY NOON—SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1306 AND 1310

Pig Iron

Bessemer, valley	$42.00
Bessemer, Pittsburgh	43.96
Basic, valley	38.50
Basic, Pittsburgh	40.96
Basic, Buffalo	45.00 to 46.00
Basic, delivered, eastern Pa.	44.00 to 46.50
Malleable, valley	42.00
Malleable, Pittsburgh	43.96
Malleable, Chicago, furnace	46.50
Malleable, Buffalo furnace	46.25 to 48.25
Malleable, delivered, eastern Pa.	47.00 to 52.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. IX, eastern delivered Phila.	$47.50 to 53.50
No. 1X, Buffalo	48.00 to 51.00
No. 1 foundry, Chicago furnace	48.25
No. 2 foundry, valley	45.00
No. 2 foundry, Pittsburgh	46.96
No. 2 foundry, Buffalo	45.00 to 47.00
No. 2 foundry, Chicago furnace	46.00
No. 2 foundry, Ironton furnace	45.00 to 46.00
No. 2 foundry, Cleveland furnace	47.00
No. 2X, eastern delivered Phila.	46.50 to 52.50
No. 2X, eastern N. J., tidewater	46.50 to 52.50
No. 2X, eastern del. Boston	54.06 to 55.06
No. 2X, foundry, Buffalo furnace	51.25
No. 2X, Buffalo del. Boston	53.71 to 55.71
No. 2 foundry del. Philadelphia	45.50 to 51.50
No. 2 foundry N. J., tidewater	45.50 to 51.50
No. 2 southern, Birmingham	38.00 to 42.00
No. 2 southern, Cincinnati	46.50
No. 2 southern, Chicago	48.66
No. 2 southern, Phila.	50.66
No. 2 southern, Cleveland	48.66
No. 2 southern, Boston	52.67
No. 2 southern, St. Louis	47.74
No. 2X, Virginia furnace	45.25 to 48.25
No. 2X, Virginia, Philadelphia	50.49 to 53.49
No. 2X, Virginia, Jersey City	50.91 to 53.91
No. 2X, Virginia, Boston	52.51 to 55.51
Gray forge, valley, Pittsburgh	45.96
Gray forge, eastern Pa.	46.00 to 49.50
Low phosphorus, standard, valley	56.00 to 58.00
Low phosphorus, standard, Phila.	65.32
Low phosphorus, Lebanon furnace	57.00
Charcoal, Superior, base, Chicago	58.50

Silvery Iron

8 per cent base at furnace

Jackson County, Ohio	$60.00
Tennessee, Chicago delivery	62.53
Ohio brands, Chicago	65.07

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 per cent	$69.50
11 per cent	72.80
12 per cent	76.10

Coke

Connellsville furnace	$ 9.00 to 9.50
Connellsville foundry	10.00 to 10.50
Pocahontas furnace	12.50 to 13.00
Pocahontas foundry	14.00 to 14.50
New River furnace	15.00 to 16.00
New River foundry	16.00 to 17.00
Wise county furnace	13.00 to 14.00
Wise county foundry	15.50 to 16.50

Ferroalloys

Ferromanganese, 80 per cent, c.i.f. Atlantic ports, domestic metal	$135.00 to 170.00
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	135.00 to 170.00
Spiegel, 18 to 22 per cent furnace spot	65.00 to 80.00
Ferrosilicon, 50 per cent, spot and contract, delivered	$82.50 to $85.00
Ferrotungsten, standard, per pound contained	75c to 85c
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	18.00c to 19.00c
Imported ferrochrome, 6 to 8 per cent carbon	16.50c to 17.00c
Ferrovanadium, 30 to 40 per cent per pound contained, according to analysis	$6.50 to 9.00
Ferro carbo-titanium, carloads, producers plant, per net ton	$200.00

Semifinished Material

BILLETS AND BLOOMS
(4 x 4 inch)

Open-hearth, Pittsburgh	$53.00
Open-hearth, Youngstown	55.00
Open-hearth, Philadelphia	55.74 to 60.74
Bessemer, Pittsburgh	55.00
Bessemer, Youngstown	55.00
Forging, Pittsburgh	65.00
Forging, Philadelphia	70.74

SHEET BARS

Open-hearth, Pittsburgh	$55.00 to 60.00
Open-hearth, Youngstown	55.00 to 60.00
Bessemer, Pittsburgh	55.00 to 60.00
Bessemer, Youngstown	55.00 to 60.00

SLABS

Pittsburgh and Youngstown	55.00 to 60.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$75.00
Grooved skelp, Pittsburgh	3.25c
Sheared skelp, Pittsburgh	3.25c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	2.45c to 3.10c
Structural shapes, Philadelphia	2.80c to 3.35c
Structural shapes, New York	2.83c to 3.38c
Structural shapes, Chicago	2.83c to 3.23c
Tank plates, Pittsburgh	2.65c to 3.00c
Tank plates, Chicago	3.03c to 3.38c
Tank plates, Philadelphia	3.00c to 3.35c
Tank plates, New York	3.03c to 3.38c
Bars, soft steel, Pittsburgh	2.35c to 3.00c
Bars, soft steel, Chicago	2.73c to 3.63c
Bars, soft steel, New York	2.73c to 3.63c
Bars, soft steel, Philadelphia	2.70c to 3.60c
Bar iron, common, Phila.	4.35c to 4.60c
Bar iron, common, Chicago	3.75c to 4.00c
Bar iron, common, Cleveland	3.75c to 4.00c
Bar iron, common, New York	4.38c to 4.63c
Bar iron, common, Pittsburgh	4.75c to 5.00c
Hard steel bars, Chicago	3.75c to 4.00c

Rails, Track Material

Standard bessemer rails, mill	$45.00 to 60.00
Standard open-hearth rails, mill	47.00 to 62.00
Relaying rails, light, St. Louis	40.00 to 45.00
Relaying rails, Pittsburgh	50.00 to 55.00
Angle bars, Pittsburgh base	3.10c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.75c to 3.00c
Spikes, railroad, Pittsburgh	4.00c to 4.25c
Track bolts, Pittsburgh	6.00c to 6.50c
Track bolts, Chicago	4.98c to 6.38c
Track spikes, Chicago	4.63c
Tie plates, Chicago	3.00c to 3.50c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	$3.25 to 4.50
Plain wire, Pittsburgh	3.25 to 4.00
Galvanized wire, Pittsburgh	3.95 to 4.70
Barbed wire, painted, Pittsburgh	3.40c to 4.60c
Barbed wire, galvanized, Pittsburgh	3.95c to 4.70c
Polished staples, Pittsburgh	3.40c to 4.50c
Galvanized staples, Pittsburgh	4.35 to 5.10
Coated nails per count keg, Pitts.	2.85 to 4.10

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Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	7.25c
Sheet piling, base, Pittsburgh	3.25c to 4.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.25c to 8.00c.

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 6.50c
No. 28, bessemer, Pitts.	4.35c to 6.50c
No. 28, open-hearth, Chi.	4.73c to 7.88c
No. 28 Philadelphia	4.70c to 6.85c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 7.00c
No. 28, bessemer, Pitts.	4.35c to 7.00c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c to 8.25c
No. 28 bessemer, Pitts.	5.70c to 8.25c
No. 28, open-hearth, Chi.	6.08c to 9.38c
No. 28, open-hearth, Philadelphia	6.05c to 8.35c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c to 5.25c
No. 10, bessemer, Pitts.	3.55c to 5.25c
No. 10, open-hearth, Chi.	3.93c to 6.38c
No. 10, open-hearth, Phila.	3.90c to 5.60c

Full sheet schedule page 1310.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts	$7.00 to $8.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers Carloads	Black	Galv.
¼ to 3 in., butt steel	54 to 57½	40½ to 44
¼ to 1½ in., butt, iron	24½ to 34½	8½ to 18½

Full pipe schedule page 1310.

Boiler Tubes

Steel, 3½ to 4½ inches, c. l.	20 to 40½
Iron, 3½ to 4½ inches, c. l.	list to 11 off

Cast Iron Water Pipe

Without War Freight Tax
(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	88.10
Six-inch and over, Chicago	83.10
Four-inch, New York	87.22
Six-inch and over, New York	77.22
Four-inch, Birmingham	79.00to 83.00
Six-inch and over, Birmingham	74.00 to 78.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c to 5.00c
Bands, Pittsburgh	3.05c to 5.00c
Hot rolled strip steel, Pitts. stamping quality	5.00c
Cold finished steel bars, Pittsburgh base	4.00c to 4.25c

Cotton ties, 3000 bundles and over $2.07½ to $2.52½ per bundle mill, November basis, with 1½c per bundle per month carrying charge.

Rivets

Structural rivets, Pittsburgh	4.75c
Boiler rivets, Pittsburgh	4.85c
Rivets ⅞ in. and smaller, Pitts.	40 to 40-10 off

Nuts and Bolts

(Prices f.o.b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	30 -10 to 20-10 off
Cut thread	30 to 20 off
Larger and longer	25 to 20 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	40-5 to 25-10 off
Cut thread	30-10 to 25 off
Larger and longer	30 to 25 off
Plow bolts Nos. 1, 2 and 3 heads	35 to 25 off
Other style heads	20% higher
Stove bolts in packages	60-10 off
Stove bolts in bulk	60-10-2½ off to 2½ off
Cold pressed semifinished hexagon nuts ⅜ in. and larger	50-10 to 40 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	50-10 to 40 off
Gimlet and cone point lag screws	40-5 to 40 off

NUTS

(Up to 1¾ and 1½ inches inclusive)

Hot pressed, square blank	$0.50 to $1.50 off
Hot pressed, square tapped	$1.00 off list
Hot pressed, hexagon, blank	$0.50 to $1.50 off
Hot pressed, hexagon tapped	list
Cold pressed, square tapped	$1.00 off to $1.00 on
Cold pressed, square tapped	$1.50 off to $1.00 on
Cold pressed, hexagon tapped	$1.50 off to $1.00 on
Cold pressed, hexagon blank	$1.00 off to $1.00 on

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

Prices given in this table are those ruling on the largest percentage of sales, at the dates named

	Prices Nov. 3, 1920	Average prices Oct. 1920	Aug. 1920	Nov. 1919
Bessemer, valley, del., Pittsburgh	$ 43.96	$50.15	$49.50	$32.00
Basic, valley, delivered, Pittsburgh	40.96	47.20	49.40	30.35
No. 2 Foundry, val. del. Pittsburgh	46.96	48.96	49.65	33.15
*No. 2 Foundry, Chicago, furnace	46.00	46.00	46.00	31.75
Lake Superior charcoal, Chicago	58.50	58.50	57.50	35.50
Malleable, valley	42.00	48.25	48.25	31.75
Malleable, Chicago	46.50	46.50	46.50	32.25
*Southern, No. 2, Birmingham	42.00	42.00	42.00	30.65
*Southern Ohio, No. 2, Ironton	46.00	46.00	46.50	31.75
Basic eastern, del. eastern Pa.	45.50	51.25	47.20	33.00
**No. 2X, Virginia, furnace	48.25	49.75	49.75	33.40
**No. 2X, eastern del., Philadelphia	49.50	52.65	50.95	35.85
Gray forge, valley del., Pittsburgh	45.96	50.96	47.80	31.75
Ferromanganese, 80 per cent, tidewater	170.00	170.00	*195.00	*110.00
Sheet bars, bessemer, Pittsburgh	60.00	63.75	70.00	48.00
Sheet bars, open-hearth, Pittsburgh	60.00	63.75	71.25	48.00
Billets, bessemer, Pittsburgh	55.00	58.75	61.25	45.00
Billets, open-hearth, Pittsburgh	55.00	58.75	61.25	45.00
Steel bars, Pittsburgh	3.00	3.25	3.25	2.875
Steel bars, Chicago	3.38	3.88	3.52	2.62
Iron bars, Philadelphia	4.60	4.65	4.75	2.895
Iron bars, Chicago mill	$ 3.75	3.75	3.75	2.73
Beams, Chicago	2.85	3.33	3.52	2.72
Beams, Pittsburgh	3.10	3.10	3.15	2.45
Beams, Philadelphia	3.35	3.425	3.50	2.695
Tank plates, Pittsburgh	3.00	3.20	3.50	2.65
Tank plates, Chicago	3.03	3.03	3.77	2.02
Tank plates, Philadelphia	3.35	3.485	3.75	2.895
Sheets, blk., No. 28, Pittsburgh	6.50	7.00	7.00	4.35
Sheets, blue annd., No. 10, Pittsburgh	5.00	5.00	5.00	3.55
Sheets, galv., No. 28, Pittsburgh	7.50	7.50	7.50	5.70
Wire nails, Pittsburgh	4.00	4.00	4.00	3.00
Connellsville furnace coke	9.00	15.10	17.75	6.35
Connellsville foundry coke	10.00	16.85	18.25	7.10
Heavy melting steel, Pittsburgh	25.00	28.00	27.75	24.50
Heavy melting steel, eastern Pa.	22.25	23.55	24.15	20.80
Heavy melting steel, Chicago	20.00	21.35	24.15	20.65
No. 1 wrought, eastern Pennsylvania	27.50	29.85	33.75	27.85
No. 1 wrought, Chicago	21.25	22.50	28.50	26.50
Rerolling rails, Chicago	30.00	34.00	38.00	31.15

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †delivered.

Iron Prices Continue To Decline

Eastern Basic Drops $6 to $8 in Week—Valley Basic Offered at $38.50 and Bessemer and Malleable at $42—Market Soft in All Districts — Resale Iron Is an Important Factor

Pittsburgh, Nov. 2.—While the pig iron market is extremely dull and only light tonnages have been sold during the past week, further softness has developed as is indicated by offerings of furnace interests. One producer now is quoting standard bessemer and malleable iron at $42 and basic at $38.50 valley. These levels represent a reduction of approximately $5 a ton on bessemer and malleable as compared with one week ago, and with $1.50 a ton on basic. Gray forge iron is being quoted at $44 valley. A small lot of bessemer has been sold at $42, but so far as reported there has been no sales of malleable and basic at the reduced levels. No. 2 foundry iron (1.75 to 2.25 silicon) appears to reflect more strength than other grades and sales in lots as high as 500 tons have been made at $45 valley for early shipment. Resale tonnages, mostly in basic iron, still are being offered and some steel works stacks also are quoting on this grade. The easier tone in the market is due to the slump in the price of coke. Pig iron output has been rather sharply curtailed during the past 10 days and it is understood that a number of steel works stacks have been banked since the latter part of last week. The Carnegie Steel Co., however, has added to its active list and now has 42 furnaces in blast, a gain of two over one week ago. The average prices of bessemer iron for October was $47.25 valley and for basic $42.418 valley according to the figures of W. P. Snyder & Co., which compare with an average of $48.50 for each grade in September.

Orders Extremely Scant

Cleveland, Nov. 2.—Prices in pig iron continue a downward course but the business placed in Cleveland and surrounding territory is so scant that the local basis of prices is not clear. Cleveland makers continue to quote $47 furnace base but this is purely nominal figure as no business is being taken except in occasional carload lots. Other nearby lake producers continue to quote at $46 and $47 base. A valley maker sold 500 tons of No. 2X (2.25 to 2.75 silicon) for this year's delivery and other smaller lots to go to the Pittsburgh district on the basis of $45 furnace for 1.75 to 2.25 silicon. Malleable is untested but there are reports of $44 valley having been named. Inquiries are few. Among those that came up in the week were 250 tons for Dayton and 900 tons for northern Indiana delivery both for this year. Shipments continue more sluggish and practically all the furnaces now are piling some iron in various quantities.

Mark Time at Chicago

Chicago, Nov. 2.—Anything less active than the pig iron market in Chicago would be difficult to imagine. While this has been the condition for several weeks, it seems to be accented at present and many observers believe some change must come about shortly, possibly between election and the first of next year. In the absence of inquiry and sales, furnace price remains nominally unchanged and in spite of resale offerings at considerably under the market level, buyers appear not to be tempted. In fact, most sellers believe that a decided cut in prices would fail to bring about active buying. Consumers seem to have argued themselves into a position where they simply do not care to buy any further iron until the situation has cleared. Resale iron is offered in considerable tonnage at concessions that would be attractive under ordinary circumstances, but which produce no resale at present. With furnaces holding northern iron at $46, for 1.75 to 2.25 silicon, resale iron is available at $41 to $43. Southern iron continues to be quoted by southern merchant furnaces at $42, Birmingham, for the base grade, while resale material can be obtained at $38 upward. Silveries are not active, a Tennessee stack quoting $55, furnace, for 8 per cent, while Ohio producers are holding a nominal quotation of $60. A recent inquiry for 500 tons of this grade has been withdrawn. Low phosphorus iron is inactive but recently a resale lot of 100 tons was sold in this district on the basis of $55, Ohio furnace. This is considerably less than eastern Pennsylvania quotations of $58, furnace, $60, furnace, quoted by an Ohio producer.

Market Still Waits

Boston, Nov. 1.—Resale iron continues to form the bulk of the trading in New England and the lack of activity among the foundries is causing unusual concessions in cases where tonnage placed early in the year at lower prices is just being delivered. One consumer with 1000 tons on wheels which he is unable to take care of at his own plant is offering to sell at the original furnace price of $42 or practically $8 under the nominal market today. Eastern Pennsylvania prices are still at the high level of $50 for the base grade at the furnace and while no sales have been reported in New England at this figure some definite direct furnace sales at full price were made for last quarter delivery in the Philadelphia district. Some New England consumers are

alarmed over the slump in the demand for castings. Eastern furnaces after a period of greatly restricted shipments to New England because of embargoes during the summer have felt obligated to do their utmost in making up this lost tonnage and in many cases have overstepped the mark at the expense of some other districts so that the end of October found New England better stocked in pig iron than either the Philadelphia or the New York territories. Furnace sales, however, in all of the eastern consuming districts in October have totalled less than 20,000 tons. Despite this tonnage furnaces are still behind on delivery which may account for their reluctance to sell at any figure. A survey of the eastern furnace situation indicates the average furnace is sold through the first quarter. The reserve in eastern furnace yards is small, being between 20,000 and 30,000 tons. Transactions during the week in New England in resale iron which have come to light total approximately 2500 tons but private sales from one foundry to another easily may have doubled this amount.

Resales Dominate Market

New York, Nov. 1.—Resales of foundry iron in the East easily have aggregated 5000 to 10,000 tons during the past week. This business involved iron for all districts and all of it is for shipment this year. Offerings of eastern Pennsylvania foundry iron have become more plentiful and it now is easy to buy the 2.25 to 2.75 silicon grade at $45 to $47, eastern Pennsylvania furnace. Resales of Virginia foundry have been made at prices ranging from slightly less than $45 to $46, furnace, for the 1.75 to 2.25 silicon grades. Resales of Buffalo foundry have been made at prices as low as $43, Buffalo, for the 1.75 to 2.25 silicon grade. There has been some inquiry for foundry for shipment over the first quarter, including one lot of 3000 tons for a New Jersey melter, but the consumers have not gone any further than to obtain quotations. In a few cases, melters express themselves as ready to place first quarter orders when the furnaces advise such action. One melter is feeling out the market with respect to its foundry requirements over the entire first half. It is learned here that several thousand tons of foundry have been sold for first quarter in another district during the past week, but not at current market prices. Some malleable iron has been resold at $46.25, Buffalo, but it is said that lower prices now could be done on this grade.

Eastern Basic Slumps

Philadelphia, Nov. 1.—Basic iron in eastern Pennsylvania has dropped $6 to $8 per ton during the week. One eastern consumer bought 1500 tons of eastern Pennsylvania basic at resale at $44 delivered. Following a recent sale of 1000 tons of Ohio basic to an eastern consumer $43 valley or $49.16 delivered eastern Pennsylvania, round tonnages of valley basic are being offered at $45 and $45.50 delivered, eastern Pennsylvania or $38.84 and $39.94 valley. Basic also can be had from eastern Pennsylvania makers at $44 to $46, furnace. Thus $44 to $46.50 delivered represents the current basic market in eastern Pennsylvania. Resale business is the chief feature of the foundry market and the total is smaller than in previous weeks. The current resale market on No. 2X (2.25 to 2.75 silicon) is $44 to $45 Virginia furnace, $44 to $46 eastern Pennsylvania furnace and $42 to $44, Buffalo. Considerable Buffalo iron originally bought for this year has been resold for first quarter at $43 to $45. The minimum price so far done by eastern Pennsylvania makers is $48 furnace for No. 2X. Virginia foundry iron now might be had from makers at a concession under the $47 base furnace figure. Central Pennsylvania makers would sell for first quarter at $45 base furnace. Asked as to the lowest possible figure that may develop on foundry iron, one authority thinks $40 furnace will be the ultimate level. This observer points out that higher freight rates are a big factor and even should coke go to $7 the cost of pig iron making in the East would be close to $40.

Coke Factor is Less

Buffalo, Nov. 2.—The striking development of the pig iron market the past week was the drop in the coke price which is not affecting present contracting but may operate to reduce future prices. Some buyers of iron, sensing a declining market as the result of the break in coke have made requests for cancellations. Furnaces are holding them strictly to contract in view of the fact most of the iron sold was made with high priced coke. Deferred deliveries are being granted in some instances. Iron sold during the past week was principally resale. One interest sold 250 tons of foundry at lower than $50, while another interest sold 250 tons at $46.25. Producers are careful to point out that this price does not make the market; that it was entirely resale and that furnace iron cannot be bought at less than the regular market prices.

Current Price Schedules Held

Cincinnati, Nov. 1.—Iron makers in the southern Ohio, Alabama and Tennessee districts are relying on curtailed production as a result of the blowing out of numerous blast furnaces, to maintain prices temporarily. While no iron is being piled in furnace yards, such tonnage as is ready for the market is generally being held firmly at current price schedules. There appears to be a determination on the part of many of the producers to hold at a low point of output pending more satisfactory conditions and cheaper costs. In the meantime, representatives of furnaces in this district, are refusing to quote less than $42 base for No. 2 southern, and it is said that there is but little, if any output of southern furnaces obtainable below that figure. One Cincinnati distributor today sold one carload of southern No. 2 foundry (1.75 to 2.25 silicon) at $42, Birmingham, and filled out orders for prompt delivery of an approximate aggregate of 500 tons, all at a uniform price. Other scattering orders have been booked to cover immediate demands, amounting to about 1000 tons. In the southern Ohio district additional furnaces have been put out of blast and production is being reduced steadily. The Wellston and Norton furnaces are out, and but one Marting stack is in blast. Producers in this field are disinclined to make concessions on their high-cost iron, and most of the output of the district available is held at $46, base, although there is said to be some iron to be had at $45, valley. The market is devoid of inquiries and future order books represent lighter business than was anticipated a few weeks ago. The break in coke prices is expected to have an early effect on the iron market.

Southern Output Cut Low

Birmingham, Ala., Nov. 2.—While the pig iron market is quiet, and new business aggregates but half of the output, southern furnace companies are confident of greater activity before the year closes. They base their judgment largely upon the reduced production now current in the South which is the largest in a number of months. Ten furnaces recently have gone out in Alabama and Tennessee for repairs, relining, or trade conditions, including those of the Central Foundry Co. at Holt, of the Woodstock Operating Corp. at Anniston, of the Alabama Co. at Gadsden, of the Sloss-Sheffield Steel & Iron Co. and Sheffield Iron Corp at Sheffield, in Alabama; while in Tennessee, Napier, Collinwood, LaFollette, Cranberry, Chattanooga, Allens Creek, are idle within the month. It is reported that independent producers have offered iron under the $42 base for No. 2 foundry (1.75 to 2.25 silicon). The Tennessee Coal, Iron & Railroad Co. has made no change in its quotation, $38, base, but it has not had a large tonnage to offer. Another company is said to have made a quotation of $40, but its offering also is light. The active iron companies including the Sloss-Sheffield Steel & Iron Co., Alabama Co., Republic Iron & Steel Co. and others, are making no concessions from the $42 base, so far as can be ascertained. Iron on furnace yards is disappearing rapidly and shipments exceed the make. Local consumption is lagging. Sanitary pipe plants are readjusting operating schedules and wage scales.

Offer Heavy Tonnages at Resale

St. Louis, Nov. 2.—No inquiry is current in this market for pig iron. While numerous furnace interests declare they have not receded from the $42 base, it is quite generally understood that iron can be had under that figure. These interests have forward orders on their books and are not seeking immediate business. The feeling is very bearish, especially among users, and this sentiment has been emphasized by the recent heavy offerings of resale iron. Virtually all the agencies have quantities of such iron, the prices of which show a wide range. There are endless reports of consumers wishing their iron held back. Reports of weakness in the eastern and northern districts have not helped the situation here, and the sharp drop in coke has increased the softness. The feeling prevails that a decline in pig iron is inevitable. Furnace interests point out that there is little iron piled at points of production, and that no surplus will be manufactured under present high labor and material costs. Many stacks are banking their fires or blowing out.

with the result that a real scarcity may develop. On the other hand, it is argued that the demand has fallen off, and any deficit caused by reduced production will be more than offset by resale iron, and surplus in melters' hands. Foundry operations are slowing down and mills and shops are reducing schedules. Consumers generally show little interest in the market. The St. Louis Coke & Chemical Co., the plant of which has just been completed at Granite City, announces that it is now in a position to furnish pig iron of the following analysis: phosphorus, 0.20 per cent and under; sulphur, 0.05 and silicon 3 and under for shipment from Granite City. The present capacity of the plant is 500 tons daily. Work is being pushed on the coke plant. The Mississippi Valley Iron Co.'s plant was down two days for minor repairs last week, but has resumed operations.

Ore Shipments Heavy

October Tonnage Greater Than in 1918—No More Suspensions

Cleveland, Nov. 2.—Iron ore tonnage shipped by the vessel route from the Lake Superior district in October exceeded the tonnage moved in October, 1918. Final figures on the month's shipments do not vary greatly from the preliminary estimate issued last week. They show the total to be 8,848,986 tons as compared with 8,541,593 tons in the same month in 1918, and 6,201,883 in 1919.

The total movement for the season to Nov. 1 this year amounts to 53,122,342 tons, as compared with 56,870,871 in 1918, and 43,978,414 in 1919. The Ore & Coal exchange, Cleveland, reports that approximately 5,176,569 tons of ore were shipped to interior furnaces from Lake Erie ports in October, as compared with 6,207,775 tons in September. Railroad transportation facilities improved and vessel dispatch was better than in the previous month, but less ore was billed to interior furnaces and more was piled on docks for winter shipment. In October 978,478 tons were piled on docks as compared with 860,000 tons in September.

Shipments from the head of the lakes at present are much better than anticipated, and it is understood that the leading interest will continue shipments up to the end of navigation to make up some of the tonnage in which it is in arrears. Shippers report that furnaces are taking all the ore that can be shipped, and no further requests have been made for cancellations or carry-overs. Several inquiries are in the market for small tonnages of high phos ore.

Operators do not anticipate any special interest in the market until next spring, due to the slackening of furnace operations. They foresee another big market in prospect when liquidation has been completed, and in discussing prices the concensus of opinion at present is against reduction in ore. The matter, however, depends largely on the outcome of two important issues now pending, the first being the reduction of freight rates from mines to upper lake docks, and the other the outcome of the tonnage tax question.

Coke's Descent Slows Up

New Business in Spot Furnace Shows Reduction of but $1.50 to $2 in Week—Market for Foundry Dull—Consumers Delay Contracts

Pittsburgh, Nov. 2.—Further decline in the price of standard spot Connellsville furnace coke has been made and the market today is quotable at $9 to $9.50. These levels were established yesterday and are based on actual transactions. They represent a further reduction of from $1.50 to $2 a ton from the market of a week ago. The market for spot foundry coke is extremely quiet. It is reported that tonnages have been sold at $10 to $10.50, although some makers are quoting $11 to $12. There appears to be practically no contracting in either furnace or foundry fuel, consumers showing disinclination to come into the market until they feel certain that it has reached its minimum levels. Increase in production in the Connellsville region has been so slight, that ordinarily it would not affect the market, but the outstanding factor which has developed a softer tendency is the decreased consumption as the result of the banking of blast furnaces. Production in the Connellsville region for the week ending Oct. 23 was 208,640 tons, as compared with 213,265 tons the preceding week, according to the *Connellsville Courier*.

Consumers Well Covered

Boston, Nov. 1.—By-product coke for foundry use continues at the high levels established early in October. Current demand from foundries has dropped off again after the revival of a week ago. Most consumers are known to be short in their winter surplus stocks, and early in the week it was thought that a movement was starting toward increasing this tonnage. However, the recent break in the coal market together with the slump in beehive coke evidently has caused most consumers to wait. The continued mild weather is a large factor in the present low demand. First half coke has continued along the active lines of the last few weeks, and nearly all of the larger foundries in New England are well covered as to their requirements to July 1. The low Connellsville prices have caused renewed inquiry in Connecticut sections for beehive coke, but the business actually placed has been negligible so far.

Spot Furnace Is Bought

Cleveland, Nov. 2.—Spot furnace coke in fair lots was purchased by valley pig iron makers in this district the past week on the basis of $10 to $10.25 Connellsville. Spot foundry coke is being quoted around $13 Connellsville.

Eastern Market Lower

New York, Nov. 1.—A weakening tone continues to characterize the coke market in this district, and the latest offerings from the beehive makers have been $12, Connellsville, for spot foundry coke, and $10 for spot furnace coke. These prices are on fuel of standard quality. Demand for foundry coke for first half has eased off. The beehive makers, as well as the northern New Jersey by-product producer, continue to ask $15, Connellsville, on first half foundry coke.

Spot Furnace $10 in East

Philadelphia, Nov. 1.—Spot furnace coke now is offered freely in the eastern district at $10, Connellsville.

Lower Prices Fail to Attract

Cincinnati, Nov. 1.—In the face of the recent slump in prices, four coke makers in the Wise county field are reported to have shut down their plants. Other suspensions within a few days are probable. With supply curtailed, Cincinnati distributors anticipated a firm market. However, the action of oven companies has not had the effect of checking price declines and quotations were marked down in a general revision of schedules made today. There has been a slightly better supply of Pocahontas coke in this market, and until a few days ago there was moderate buying of both furnace and foundry for spot delivery, but this appears to have disappeared and consumers all along the line have withdrawn from the market, the lower range of prices having failed to attract new orders either for nearby or future delivery. The only sale of note is a moderate tonnage of New River foundry to a St. Louis consumer, for which $18, oven, was paid.

Prices at St. Louis Reduced

St. Louis Nov. 2.—Standard Connellsville foundry coke is offered here at $14.50 for prompt delivery, a drop of $3 as compared with a week ago. Definite figures are not quoted for first half delivery, but it is intimated that tonnages may be had at $12. The drop came specifically in reponse to the decline in the East. Demand has fallen off materially. Melters are now getting more than they need for immediate requirements, and signs of accumulation are apparent for the first time in many months. In addition to a slowing down in the demand, users are becoming much more particular with reference to quality. They are insisting on a grade similar to that they were accustomed to using in the days prior to the scarcity and high prices. The West and Southwest is now sending out few inquiries. The leading local by-product interest has reduced its prices, and has tonnages for sale.

Southern Production Increasing

Birmingham, Ala., Nov. 2.—Coke production in Alabama has increased considerably and continues to improve as coal production grows. Coal operators claim they have overcome the strike of union mine workers, though the labor leaders are making strong efforts to hold their men out. With the militia in the district, the union leaders are unable to hold mass meetings. It is reported that outside interests are offering coke contracts for 1921 delivery, and some producers are likely to take on a little tonnage.

Bar Price Is Reduced

Independent Mills Now Openly Quote 3.00c Pittsburgh—One Interest Credited with Booking 10,000 Tons in Recent Sales Drive at 2.35c

Chicago, Nov. 2.—Soft steel bars continue the strongest feature in the finished steel market, with the leading producer and the leading independent in the Chicago district both out of the market. Neither of these has a price and neither will take on bar tonnage at present. Light sections are most in demand, and more of this sort of business is on mill books than of heavier sections. In the case of the leading interest delivery of light bars is six to seven months. The last price at which bars were sold by the leading interest was 2.73c, Chicago mill.

Inquiry for bar iron is considerably less than was the case recently, and railroads are not showing the same interest in the market. Practically all producers have good backlogs and few cancellations are being asked. The quotation is firm at 3.75c, Chicago mill and, except on orders containing only small sizes, this price can be done. Where small sections only are asked, mills are quoting 4.00c, Chicago mill.

Demand for hard steel bars rerolled from rails is practically absent, although small tonnages are taken occasionally. Mills are operating on one turn, partly from lack of business and partly because old rails are scarce. One mill has been rolling soft steel bars from billets for some time. The quotation on this product is nominal at 3.75c, Chicago mill.

Not Anxious to Shade

New York, Nov. 1.—As far as known, none of the independent mills have offered to take steel bar orders at less than 3.25c, base Pittsburgh. Consumers say that 3.00c can be done on bars for nearby shipment, but this is not verified. Demand is not sufficiently attractive at this time to afford a test as to the market. The mills, however, have better order books in bars than in plates and shapes, for instance, so that they are less keen to shade bar prices.

Eastern Market Quiet.

Philadelphia, Nov. 1.—As a rule independent steel bar makers continue to ask 3.25c, Pittsburgh, on any shipment, but one or two attractive tonnages involving little more than 100 tons have been booked at 3.00c. The latter business included 4 to 6 inch steel bars. Demand is very quiet.

Reduction of $5 Made

Pittsburgh, Nov. 2.—A reduction of $5 a ton in its price on merchant steel bars has been made during the past week by a prominent independent producer who has been quoting 3.25c and now is quoting 3.00c, base, Pittsburgh. Another producer who has been quoting 3.50c now is quoting 3.25c. While there still is some demand for steel bars, mostly for the smaller sizes, it is not active and mills are more anxious to take new business. A number of the latter still are quoting 3.25c but state new orders are light. The Pittsburgh Crucible Steel Co. which opened its books for a few days recently at 2.35c, is understood to have taken a heavy tonnage at this level, or at the same level as that of the Carnegie Steel Co., and it is claimed this had a weakening effect on the market. The new price of the Pittsburgh Crucible Steel Co. is 3.25c. A Maryland maker of shafting is said to have cancelled an order for steel bars at 4.00c which had been placed when it was unable to get deliveries on contracts at a lower price but, these deliveries having been made before the tonnage taken at 4.00c was shipped, the cancellation followed.

Makers of refined iron bars report they have had only a few cancellations and that some of these are due to a duplication of orders by buyers. New inquiries, however, are light and operations are being devoted to the working up of old orders and are estimated at about 80 per cent of capacity. Some producers report a shortage of puddlers because of inability to get out muck bars in sufficient lots to keep their mills going.

Tonnage Placed at 2.35c

Cleveland, Nov. 2.—Recent sales in this territory of steel bars for prompt shipment by a Pittsburgh independent interest at 2.35c Pittsburgh, the Steel corporation price, are placed at 4000 to 5000 tons. At least one lot of 1000 tons was included. Some of these lots were placed on promises of one to two weeks' delivery, as it is understood this producer was booking against a mill which was practically without orders. Approximately an equal tonnage is understood to have been taken by this maker in other districts before it withdrew from the market. Some independent mills now are openly quoting 3.00c Pittsburgh on steel bars. Little new business is moving. Farming implement manufacturers who were reported as disposed to go ahead with the next season's program without change now are sending in some suspensions of mill orders. Reinforcing bars are dull and 3.25c mill is being done.

Specifications Are Lighter

Pittsburgh, Nov. 2.—Specifications for nuts, bolts and rivets are lighter, railroads and others not taking requirements so freely as they were 30 days ago. Shipments generally are satisfactory and some producers report October was the heaviest month of the year. Most producers are committed for the rest of the year. Some of them have not been able to ship on account of shortage of cars and one producer rolling from billets has had difficulty in getting steel.

Sales Still Go at 4.25c

Pittsburgh, Nov. 2.—Sales of cold-finished steel bars have been made during the past week at 4.25c, showing this level still is a factor, although it is said tonnages involved have been light. It is true, however, the volume of new business generally in this market is small. While cancellations from the automobile trade still are coming in, producers claim they are about at an end but that the period of readjustment in this line still is going on. The market range on cold-finished steel bars is 4.00c, the price of the American Steel & Wire Co., to 4.25c. The base price named by one interest to its regular customers is 4.10c. The amount of business this seller has taken at 4.10c and over is understood to be less than 10 per cent of its entire backlog business which was taken at the old base of 3.60c.

Market Is Easier

Pittsburgh, Nov. 2.—Dullness prevails in hoops and bands and, with inquiries becoming lighter and some cancellations being made, the market is easier. Prices range from 3.05c, the Carnegie Steel Co. figure to 5.00c, independents having reduced their quotation to the latter level from the previous figure of 5.50c. One independent is quoting 3.85c, mill, but reports practically no new business is being taken. The season for cotton ties is closed and no new business in this line is moving. The November price of the Carnegie Steel Co. is $2.07½ per bundle of 45 pounds, and the independent price is $2.52½ per bundle for 3000 bundles and more.

Small Bolts in Demand

Chicago, Nov. 2.—Demand for smaller sizes of nuts and bolts continues strong with some recession of demand on larger sizes. As a result of this condition, some shading has been done by bolt makers not favorably situated as to future business, but most producers are holding to their schedule. A recent export inquiry calls for 5,000,000 pieces, which probably will be placed in the West, as the level of prices here is slightly under those further east.

Price Reductions

May be Made by Domestic Ferromanganese Producers—Spiegeleisen Dull

New York, Nov. 1.—Resales of moderate sized tonnages featured the spiegeleisen market this week. This business went at $65, furnace, for 20 per cent metal, and somewhat lower for metal containing less manganese. On 15 per cent metal $60, furnace, was done. The first hand market on spiegeleisen continues $75 to $80, furnace, for 20 per cent metal, but, in the absence of business, this level is nominal. Several carloads of ferromanganese for spot the past week at resale at $155 to $158, delivered, which range about indicates the resale market. Several carloads were sold in less-than-carload quantites at $175, delivered. First hands continue to adhere to the $170, tidewater quotation, but this figure, in the absence of business is nominal.

A fair amount of inquiry for ferrosilicon, running into several hundred tons of 50 per cent and 10 to 15 per cent, has been out, but steelmakers have been holding up closing until after election. Quotations are unchanged on 50 per cent alloy, at $80 to $85, delivered, and are a shade easier on 10 to 15 per cent at $60 to

$65, furnace. Little new business is going in ferrochrome. A comparatively large amount of foreign ferrochrome is held in warehouse here. Some alloy is offering from the Middle West for resale. The price asked for foreign alloy containing 70 to 80 per cent chromium and 6 to 8 per cent carbon is about 16.50 cents a pound contained. The nominal price of domestic makers continues 18 to 19 cents a pound contained. Little or no new business is going in ferrotungsten. Importers say that foreign alloy can be imported at close to 65 cents a pound contained, while spot foreign alloy is obtainable at 75 cents a pound contained. Tungsten ore is quoted $4.25 to $4.50 a short ton unit, with no demand. A lot of several hundred tons of Indian chrome ore sold recently at 62.50 cents a unit, the ore now being afloat and due to arrive in a few weeks. Some ferrovanadium of high silicon content is offering at concessions from the leading maker's price, but there is comparatively little of this. Ferrovanadium quotations are unchanged at $6.50 base for the high silicon material up to $8.25 a pound contained asked by some makers for alloy carrying less than 3 per cent silicon.

Price Cuts Expected

Pittsburgh, Nov. 2.—Sharp reductions in prices by domestic makers of ferromanganese are said to have been determined. It is understood these levels will be low enough not only to go under quotations on the English alloy but also to meet those asked for resale tonnages, and these are being offered at $150, delivered, or less. The reductions may be to as low as $140 or $145, tidewater. Even with these reductions in effect, it is a question whether they would stimulate buying. Consumers appear to be well covered and in view of the curtailed steel output, consumption has declined and there is a general apathy on the part of users of ferromanganese toward the market. Spiegeleisen also is dull and while small lots of 19 to 21 per cent are reported to have been quoted during the past week at $78 to $80, furnace, it is said resale tonnages are being offered at as low as $70.

Alloy Market Stagnant

Chicago, Nov. 2.—Ferroalloys are in no demand, inquiry being practically lacking. Prices are largely nominal and while some resale material has made its appearance it is in small lots and has had little effect. Nominal quotations are $155 to $160, seaboard, but inasmuch as trading is practically unknown, the real level is difficult to ascertain. Spiegeleisen and ferrosilicon are not in demand and quotations are nominal.

Sells at Full Price

Philadelphia, Nov. 2.—Despite low prices in the resale market a couple of cars of spot ferromanganese have been sold by first hands at the full price of $170, tidewater.

The Ford Motor Co. of Canada, Ltd., has deferred action on its usual dividend disbursement for the third quarter of the year. In 1919 the company paid 35 per cent in cash dividends. The production schedule has been curtailed from 75,000 to 55,000 cars for the year.

Sheet Market Is Lifeless

Detroit Automobile Maker's Purchase of 18,000 Tons of Black at About 5.00c Only Feature in Valley—Operations Continue To Slow Down

Youngstown, O., Nov. 2.—A maker of a low-priced automobile in the Detroit district is understood to have placed an order for 18,000 tons of black sheets last week with a producer here. While the price agreed on is not definitely known, it is said to have been around 5.00c. Buying of sheets generally is at a standstill. While the large independent sheetmakers are operating their mills practically at 80 per cent of capacity, some of the smaller sheet producers are down to not more than 50 to 60 per cent. Certain makers of sheets who buy their sheet bars state that 6.50c, mill, represents the lowest price which they can afford to sell black sheets. With $55 sheet bars, the actual cost of producing black sheets they say would be in the neighborhood of 5.50c. Based on the present wage scale, the maker would be compelled to quote at least 6.50c, mill. The actual cost of producing sheets, therefore, is 1.15 cents per pound higher than the Steel corporation's selling price or about $25 per ton more. Many sheetmakers have semi-finished material under contract between $65 and $70 which makes lower prices of black sheets appear uncertain. It is not unreasonable to expect that some makers in view of this situation will close down their mills for in some cases this action already has been taken. In addition a large number of sheetmakers who purchase their sheet bars from outside mills are not specifying against their running contracts as heavily as they were a month ago. In fact, sheet bar specifications right now are low. Stocks of all grades of sheets at mills here are low, producers preferring to store sheet bars for future specifications rather than sheets in stock sizes. In some cases, however, makers are known to have laid down recently as much as 1500 tons of warmer sizes which they were compelled to roll in order to complete orders of certain specifications. While mills generally are quoting black at 7.00c, galvanized at 8.50c and blue annealed at 5.75c, these prices might be shaded on an order ranging from 200 to 500 tons.

Prices Lower at Pittsburgh

Pittsburgh, Nov. 2.—Lower prices are being quoted on sheets, the market for which has become quiet. It is understood that as low as 6.25c has been quoted on No. 28 black sheets and that an attractive specification would develop a level as low as 6.00c, although some makers still are asking 6.50c, or higher. No. 28 galvanized sheets now appear to be quotable at 7.25c to 7.50c, but the quotation of 8.50c has not disappeared and one good-sized lot during the past week went at the latter level. The market for No. 10 blue annealed sheets is unusually dull and while some makers are asking as high as 5.50c, it is known that sales have been made as low as 4.90c and the market appears to be quotable at 4.90c to 5.25c. Statements have been made specifically by some sheet producers that cancellations of contracts have been made by the automobile trade but others insist that these are suspensions and that the proposal of automobile interests for reduction in contract prices has been refused by most sheetmakers.

Spot Buying Good

New York, Nov. 1.—Sheet buying, which up to the beginning of this month was active in this district, continues quiet and practically all of the current business consists of material for spot and nearby shipment. The mills are cheerful with respect to first quarter, however, since there is a large amount of business which is being held up at present pending the readjustment in prices. Considerable tonnage for first quarter is expected to be placed by the oil companies. Since prices started to ease off there have been some requests for cancellations and numerous ones for revision of contract prices. Independent mills in most cases are following the policy of denying these requests. Stocks of sheets on hand at consuming plants are reported to be of moderate size, so that spot orders are being placed every day. This business is going at 6.25 to 6.50c, base, Pittsburgh, for black, and 5.00c to 5.50c, base, for blue annealed. The lighter gages of blue annealed are bringing 5.25c to 5.50c, base, while it is easy to do 5.00c on the heavier gages. The usual price on galvanized sheets is 8.00c, base, Pittsburgh, although there has been a little business at 7.90 and 7.95c. Some galvanized tonnage has been disposed of at resale at a price slightly higher than 7.00c, base, Pittsburgh.

Prompt Sales Only Made

Philadelphia, Nov. 1.—Sheet demand is restricted in this district to prompt lots the aggregate of which is small There are some feelers current on first quarter tonnage but no indications are present of any forward buying. Blue annealed sheets are quoted from 5.00c to 5.25c Pittsburgh for 10 gage while 12 gage and heavier are not higher than 5.00c and in some cases have been sold at slightly less. Black sheets are at 6.00c to 6.50c and galvanized at 7.50c to 8.00c.

Deliveries Somewhat Better

Chicago, Nov. 2.—While neither producer of sheets in the Chicago district is selling further tonnages, inquiry is being received from consumers for first quarter on which mills are not yet making quotations. Eastern mills which did not make contracts find themselves in the present condition of the market where they need additional tonnage and their quotations have softened perceptibly. At present it seems possible to place No. 28 gage black at 6.00c to 6.50c, Pittsburgh, No. 10 gage blue annealed at 5.50c to 6.00c, Pittsburgh, and No. 28 gage galvanized at 7.50c to 8.50c, Pittsburgh

Scrap Buying Falls Off

Prices, However, Continue Steady on Some Grades in Several Districts Although Others Are Softer—New Low Levels Reached

FOR COMPLETE SCRAP PRICES SEE PAGE 1306

Chicago, Nov. 2.—Practically the only activity in the market for scrap iron and steel is some buying by dealers to apply on contracts and even this is diminishing, as the end of the year comes nearer and contracts are gradually being filled. Some little movement has been noted recently in cast scrap, but it is not sufficient to be a factor. Following recent sales of fair tonnages of busheling, dealers are picking up such material of this class as they can and are finding it fairly scarce. Much busheling has been shipped on contracts for shoveling steel and the current supply is curtailed. Further declines have been made in practically all grades, bringing the general level of the market considerably lower. No activity is expected to manifest itself for several weeks. Railroad offerings are not many, the only list now pending in this market being issued by the Chicago & Northwestern, offering 5600 tons. In this list is included 500 tons each of No. 1 wrought, No. 1 steel rail and heavy melting steel.

Supplies Low, Trading Quiet

Boston, Nov. 1.—In view of the dullness in the scrap iron and steel trading, prices show a surprising lack of softness. No. 1 machinery scrap is still difficult to obtain under $40 to $41 delivered even though some foundries have cancelled their orders and others state they will not come into the market again until they can buy at $35. Low priced resale pig iron is cutting into the cast scrap demand. The fact that these conditions have not caused a greater price weakness in machinery scrap is attributed to the exceedingly small amount accumulating at plants. A continued absence of orders from eastern mills has caused a gradual decline in iron and steel mill grades of scrap. Borings and turnings have dropped to $11. Forged flashings have dropped to $10 and yard wrought to $20. A sale of 250 tons of heavy melting steel during the week at the Fore River navy yard brought the unusual price of $19.60, Boston. Other sales reported include 150 tons of No. 1 machinery scrap at $39.50, Maine shipping point, for delivery to western Massachusetts and 50 tons of rerolling rails at $30, dealers' yards, Boston. Small dealers as a rule have seemed less reluctant during the past week to unload at sacrifices than they were previously.

On Decline In East

Philadelphia, Nov. 1.—Scrap prices continue to decline here and buying remains at a minimum. Rerolling rails were sold last week at $34 to $35, delivered, a drop of $4. Cupola cast is down $2. Turnings for blast furnaces also are down $2. Other grades are lower but dealers point out the statistical situation is good. They say this is first time where production of scrap has ceased before consumption. The situation in the automobile and accessories industries is said to be the cause. Mills continue to consume scrap and none has more than one month's supply on hand. Dealers' yards are practically bare. Exports of 100,000 tons of steel scrap have taken out of the country a much larger proportion of the grade than normally and as this has tended to deplete the surplus, dealers predict a strong position for scrap when mills again start to get orders on a large scale.

Further Declines In Market

Pittsburgh, Nov. 2.—Weakness in the market for iron and steel scrap has developed further declines and a number of important grades are down from $3 to $5 a ton under quotations of one week ago. Heavy melting steel now is quoted at $25 to $25.50 a gross ton. Mills appear to be well covered and are not showing any interest in the market. Consumption has fallen off as the result of curtailment of capacity of steel mills and foundries. The eastern region of the Pennsylvania railroad will take bids at Philadelphia up to Nov. 9 on approximately 19,000 tons of old material. Among the items listed are 1200 tons of steel couplers and knuckles, 1700 tons of No. 1 steel rails, 1500 tons each of railroad wrought No. 1 and No. 2, and 1200 tons of destroyed steel cars.

Suspended Shipments Hit Prices

Buffalo, Nov. 2.—The feature of the past week was instructions issued by a mill interest, which during the summer contracted heavily for heavy melting steel and cast iron borings, to suspend shipments of this material. Coming at this time, this action has had the effect of causing dealers considerable disquietude. Suspended tonnages originally destined for this mill are being placed on the market and in such quantity that the market has fallen off. Heavy melting steel is begging at $23 to $24. Suspension of these shipments is likewise backing up deals between dealers. There is no active buying of any kind at this time.

St. Louis Market at Standstill

St. Louis, Nov. 1.—Buying and selling in the scrap market is at a standstill, even the usual exchanges between dealers having halted temporarily. Sentiment is extremely bearish. Speculation is entirely absent, the present stage of the money market not being such as to encourage such activity. Price lists again have been revised downward, the latest cuts affecting nearly all grades. The figures given are approximate only, there being too few actual transactions on which to base exact quotations. Offerings have fallen off. The Pennsylvania lines west is asking for bids on 1200 tons of miscellaneous scrap. The receiver of the Colorado Midland railroad is offering for sale 50 miles of 56-pound relaying rails; 11 miles of 80-pound and 10 miles of 85-pound, in all 71 miles of rails. The latter will be ready for delivery over the next five or six months. All railroad sales since Oct. 1 have been at steadily lower figures, and bidding was backward and apathetic. The country is shipping very little scrap. With melting steel selling at $18, it is impossible to market country scrap when the advanced freight rates are considered. Yards have been pretty well cleaned, and the only restocking in progress is where operators are able to pick up something at a real bargain. The consensus of opinion is that the market will not improve much before the first of the year, when it is thought some good business will be placed. Rerolling rails have declined another $1, the latest quotation being $30 to $30.50.

New York Scrap Lower

New York, Nov. 1.—Quotations on iron and steel scrap continue to decline. Seven or eight grades have dropped off from $1 to $3, and in other materials the tone is generally weak. Heavy melting steel is now down to $17 to $18 f.o.b. New York, and rerolling rails are down to $29 to $30. This latter price even at its present reduced level could be shaded, it is believed. Both heavy and machinery cast and railroad wrought are off $1. Other descriptions of wrought scrap are unchanged, but lower prices probably could be had. The New York Central railroad is to close bids on its accumulation of scrap Nov. 4, and the Erie on Nov. 5.

Tendency Is Lower

Cleveland, Nov. 2.—The iron and steel scrap situation is featured by absence of trading, even dealers doing little business among themselves. Shipments are practically at a standstill because of the difficulty in obtaining permits, a condition which has existed for some time. Prices remain unchanged as compared with last week's quotations although the tendency is downward.

Detroit Prices Decline

Detroit, Nov. 2.—Consumers of iron and steel scrap have stopped buying for the present, and the market is quiet. The price of nearly every grade has declined, in some instances as much as $5 and $6. Grate bars and similar material are down to $19 to $20. Car wheels, which a week ago were marked down to $30, are selling at $25. Cast borings have dropped $3; stove plate $4, and boiler plate $3. Malleable is offered at $21 to $22, the lowest in several months. A week ago it was $26.

Market Dull but Prices Steady

Cincinnati, Nov. 1.—Extreme inactivity characterizes the iron and steel scrap market which continues to display a weak tendency although current quotable prices are being maintained by dealers. While there is little buying, dealers say there is no reason for marking down prices as consumers are covered for the remainder of the year. Normal buying

is expected in due time to supply the needs of the early delivery periods of next year. Buyers on the other hand take the attitude present prices are too high and that they will take the chance of a downward swing of prices.

Deliver on Old Contracts

Birmingham, Ala., Nov. 1.—The scrap iron and steel market still is quiet and the only business being done is on delivery against old contracts. Dealers telling of considerable tonnage have been sold ahead. A few inquiries were noted during the past week but the market is as quiet as it ever has been. Local consumption of old material is slowing down as readjustments are under way.

Wire Demand Less

And Cancellations, While Light, Are On An Increase

Pittsburgh, Nov. 2.—Demand for wire and wire products is less insistent and some makers report cancellations have shown an increase although they are said to be comparatively light. The new business being taken by one producer nets 35 per cent of capacity, after allowing for cancellations. The demand for wire nails especially is lighter. While the undertone of the market is easier prices remain unchanged but material is moving in a greater volume and this accounts for the less urgent demand for deliveries. One producer is quoting regular customers either on the basis of present prices, or those at time of shipment. In view of the general feeling that prices will not increase, but rather that they may decrease, most of the customers show a preference for taking tonnages at prices at the time of delivery.

Demand Less Insistent

Chicago, Nov. 2.—While inquiry for wire and nails continues sufficient to make this an active market, the keen edge seems to be off as compared with a few weeks ago. The leading interest has modified its sales policy to the extent that tonnages are being booked slightly in excess of replacements, and the desires of consumers to close for somewhat more than their shipments indicates their need for further supply. Shipments from mills are being made at a better rate than formerly but in spite of this jobbers are unable to accumulate stocks. Prices have not been changed either by the leading producer or the independents. Some of the latter, however, are now shipping against low priced orders taken before the peak in the market was reached.

Purchases War Plant

The Aeolian Co., Meriden, Conn., has purchased a part of the Meriden plant of the Colt's Patent Fire Arms Co. One of the most interesting features of this plant is its dry kiln building, containing eight of the most modern wood drying kilns in the country. During the war the Meriden plant was used by the Colt company for the manufacture of their light Browning machine guns and the dry kilns were used at that time for drying the gun stocks.

Plate Business at Low Ebb

Current Volume Smallest in Recent Years—Prices Show Increasing Softness—Meeting Corporation Figure at Chicago

Philadelphia, Nov. 1.—Actual plate business at present is smaller in volume than at almost any time in recent years. Current inquiry is only 40 per cent of what it was a month ago, and only 1 or 2 per cent of inquiry appears to be live business. Most of the inquiries are dropped without action. For instance, the Pennsylvania railroad last week inquired for 750 tons, but withdrew. Mill operations are at a low rate. There is considerable business in prospect for next year, but no indication as to when it will be placed. The Pennsylvania railroad expected to buy 40,000 tons for the first half, but has made no inquiries for this tonnage as yet. The current market is 2.90c to 3.00c, Pittsburgh.

Sales at 2.95c to 3.00c

New York, Nov. 1.—Two good-sized plate tonnages, 600 tons of sheared tank plates in one order and 1300 to 1500 tons of sheared tank, boiler and firebox plates in another, were placed during the past week in this district for immediate shipment. The prices at which this business was placed establish the sheared tank plate market at 2.90 to 3.00c, base, Pittsburgh. The 3.00c price and concessions under it are obtainable only on large lots, however. Orders for small lots for quick shipment continue to bring out prices ranging in some instances as high as 3.25c, Pittsburgh, while on small pickups here and there as high as 3.50c is being done.

Lower Prices Quoted

Pittsburgh, Nov. 2.—A prominent independent producer of plates has announced a reduction in price from 3.25c, base, Pittsburgh, to 3.00c and is waiting for car orders to take business at its new level. While independents generally say they still are quoting 3.25c, they concede that they are getting practically no new business at this figure. That which they do take is chiefly due to desirable delivery or some other particular cause. It is said that some independents outside this district are quoting 2.65c, Pittsburgh, the Carnegie Steel Co. level. Demand has become so light that considerable plate capacity has been closed down and a revival in business on a large scale is not expected to develop until the railroads come into the market. While the mills are down, producers are taking occasion to ship tonnages which have been piled up.

Price Shading Continuing

Cleveland, Nov. 2.—Shading of the 3.00c Pittsburgh price on steel plates continues to be noted in this territory. Prices of 2.90c and 2.95c appeared in the week. Little new business is moving. A few fair-sized lots for lake fleet repairs recently have been placed.

Price Spread Narrowed

Chicago, Nov. 2.—Steel plates can be bought from the leading interest at the prevailing quotation of 3.03c, Chicago mill, if specification accompanies order and fits the rolling schedule and providing delivery may be made at any time most convenient to the mill. This means that delivery might be made in a month, or within three months. This interest is not seeking contracts and has no price to announce for strictly first quarter or first half delivery. The leading independent plate producer in the Chicago district has no price, but in cases where specification with the order and the business fits the rolling schedule, prices down to 3.03c, Chicago mill, are quoted. This practically wipes out the spread between its prices and those of the leading interest. However, a quotation at this level is not made on all business offered. In recent inquiry for railroad cars about 4500 cars are asked for, which will require about 40,000 tons of steel, largely plates.

Tin Plate Unchanged

New Business Chiefly in Stock Items —Inquiries Decline

Pittsburgh, Nov. 2.—No change has developed in the market for tin plate during the past week and new business being taken largely relates to stock items which independents are selling at $8.50 when in car lots and at $9 in less than car lots. Inquiries have shown a decline but operations continue to be at about 80 per cent of capacity and most makers are well committed into the first quarter. The allotment of sheet bars for the leading interest for this week has been increased and by reason of this it is hoped to turn out a greater production than has been possible for the past few weeks. Tin plate prices for first half are expected to be announced by some independent mill in the near future.

Lull in Strip Buying

Pittsburgh, Nov. 2.—Makers of hot and cold-rolled strip steel report a lull in the market and that they do not expect any active buying movement to develop before the first of the year, when they hope tonnages will be taken for general building and for railroad purposes. Some think the automobile trade at that time may resume purchases. It is said the automobile industry has cancelled contracts for almost all the strip steel it had on the books of makers. Inasmuch as they report they are committed for the next three to four months, most makers believe they will be able to maintain operations at a fair rate, around 80 per cent of capacity, until the market becomes active again. While some producers still quote 5.50c and 8.50c on hot and cold-rolled strip steel, respectively, tonnages have been moving at 5.00c and 8.00c, and these levels now are considered to be representative of the market.

Shape Demand Still Light

Independents Quoting Corporation's Price in Chicago—Eastern Producers Inclined To Advance—Little Br dge Capacity Engaged

New York, Nov. 1.—Independent mill prices on shapes continue to range from 2.90c to 3.10c, Pittsburgh. There is, however, greater tendency to quote nearer the lower figure. Shipments now are obtained within a month to six weeks and in some instances sooner. Consumers find deliveries by far the best this year. Dullness which has characterized the market for the past several weeks continues. Among the newer projects to come before the attention of the trade is a new office building, to be erected by the Commercial Casualty Insurance Co., Newark, N. J. While no specifications have been issued, it is estimated that between 700 and 1000 tons will be required.

The Railroad Bridge Builders' society, representing approximately 40 per cent of the capacity of the country reports awards in September aggregated 26,755 tons, or 37 per cent its capacity. Shipments aggregated 53,526 tons, or 74 per cent. Its shops have 200,450 tons of work ahead, sufficient for two and three-quarters months.

Inclined to Advance Prices

Philadelphia, Nov. 1.—Shape business in the East is three to four times greater in volume than plate business, but still the shape market is quiet. The Norfolk & Western railroad placed 1400 tons, mostly at 2.45c, Pittsburgh. The Steel corporation price and most of the independents are asking 3.10c, Pittsburgh, but some are quoting 3.00c on more attractive business. An effort is being made by some independents to advance shapes to 3.25c, which they think is justified by present costs.

Market Is Featureless

Pittsburgh, Nov. 2.—The market for shapes is listless without any inquiries of importance and apparently none in prospect in the near future. Despite thhis situation, mills claim that they are not selling under 3.10c, Pittsburgh, so that this market, although extremely dull, is in the unusual position of being quoted at a higher level than the market for plates. Fabricators have taken no sizable new business during the past week but still are operating at about 80 per cent of capacity.

Bridge Tonnage Bid Upon

Cleveland, Nov. 2.—On 3300 tons of structural material and 1100 tons of eye-bars for the Belle Isle bridge at Detroit, the Mt. Vernon Bridge Co., bidding through the Strobel Bridge Co., has submitted the low figure and is expected to receive the contract. On the substructure, G. R. Cook of Detroit is low on the general contract. This involves 600 tons of reinforcing bars and several hundred tons of sheet steel piling. Invitation to submit bids on the proposed new Keith's theater and office building, Cleveland theater and office building is practically the only attraction in this field now for fabricators. Several small jobs are being estimated and these are the rule. Structural shape prices are soft and depend on the attractiveness of the tonnage.

Fabricators Take Little

Chicago, Nov. 2.—Demand for steel shapes is perhaps the slowest of any department of the finished steel market. The leading interest is willing to take tonnages when specification accompanies order, providing the specification fits the rolling schedule and delivery can be made at convenience. The leading independent producer in Chicago has no fixed schedule of prices, but will quote down to the level of the leading interest, 2.83c, Chicago mill, on a similar basis on attractive business. Much interest is manifested in the forthcoming award of about 9000 tons for the Federal Reserve bank building, which seems likely to be announced shortly.

CONTRACTS AWARDED

Bartlett & Hayward, Baltimore, 450 tons of eye bars, to American Bridge Co.

Bridge for Huntington & Broadtop railroad, 300 tons, to American Bridge Co.

Bridge No. 57, Sandusky, O., division of Big Four, 300 tons to the American Bridge Co.

New manufacturing plant for Milwaukee Boiler Mfg. Co., Milwaukee, 150 tons to Wisconsin Bridge & Iron Co.

Machine shop and assembling floor for Moloch Automatic Stoker Co., Kaukauna, Wis., 110 tons to Wisconsin Bridge & Iron Co.

Orpheum theater and office building, San Francisco, Cal., 875 tons, to Dyer Bros.

Foundry building, Lima Foundry & Machine Co., Lima, O., 250 tons, to the McClintic-Marshall Co.

Plate shop and addition to pattern storage building, Phoenix Iron Works, Meadville, Pa., 200 tons, to the McClintic-Marshall Co.

CONTRACTS PENDING

Junior Orpheum theater, Minneapolis, 1000 tons, bids asked.

Main street theater, Kansas City, Mo., 375 tons, bids asked.

Bridge at Laredo, Tex., 195 tons, bids asked.

Duplicate bridge structures for Fort street and Jefferson avenue, over River Rouge, Detroit, bids asked.

New Keith's theater and office building, Cleveland, 4000 to 4500 tons; bids asked.

Concrete Bars Wait

New York, Nov. 1.—Evidence involving bribery, the controlling of bids, and unlawful combinations which is developing in the investigation into building operations in this city by the Lockwood legislative committee has put a halt on new building projects, so that current demand for concrete bars is limited largely to small orders for spot and nearby shipment. Prices on concrete bars for mill shipment over the next couple of months range from 3.25 to 3.50c, base Pittsburgh, while in some cases spot mill shipment is held as high as 3.75c. On concrete bars for spot shipment out of stock in New York, the usual price is 5.00c, base.

Breaks World's Record

Pittsburgh, Nov. 2.—The Edgar Thomson works of the Carnegie Steel Co. broke the world's record for open-hearth steel production in one month by a 14-furnace plant, furnaces of the stationary type, in October. Edgar Thomson, Andrew Carnegie's first steel plant, broke 36 records of production altogether during the month, covering all departments of the works, and had the most remarkable month for record-breaking in the 45 years of the plant's existence. Twenty-six records were broken in the open-hearth department, five records in the foundry, two in the rail mills, two by the bessemer and open-hearth departments combined for grand total ingots produced, and one by the splice bar department.

Rail Buying Ends

Western Roads Practically Covered for 1921—Track Fastenings Sought

Chicago, Nov. 2.—Contracting by western railroads for their 1921 standard steel rail requirements is practically at an end, as all important lines have covered their needs and only a few small tonnages remain to be negotiated. No price has yet been named for rails from the Chicago mill, and contracts still are lacking in this detail. Much inquiry is being received for track fastenings, part of it being for rails just bought and part for 1921 requirements for renewals. The leading interest is not taking on this business as it has no price and is not in position to book for 1921 delivery.

After a long lull, a few inquiries for freight cars have come out recently on which builders have little hope of obtaining contracts immediately. The Norfolk & Western is inquiring for 1000 hoppers, the New York Central for 500 stock cars, the Pennsylvania for 1500 box cars and 1000 hoppers, and the Fruit Growers Express for 500 refrigerators. The Minneapolis & St. Louis is about to send out an inquiry for 1500 freight cars of various types.

Price Reduced to 3.00c

Pittsburgh, Nov. 2.—A reduction from 3.25c to 3.00c on light rails, 25 to 45 pounds, has been announced by a prominent producer in this district. Another independent steel interest is maintaining a quotation of 3.75c but business placed at this level is reported to be light and generally is due to the fact that prompt shipments from stock are being made.

Inquiries for 3000 Cars

New York, Nov. 1.—The Pennsylvania railroad is inquiring for 1500 box cars and 1000 refrigerator cars. Twenty gondolas are to be purchased by the Standard Oil Co. of Indiana. Prices are being asked on 500 stock cars by the New York, Chicago & St. Louis. Orders are few and include 50 tank cars to be built by the Pennsylvania Tank Car Co. and 35 tank cars by the American Car & Foundry Co., all for the Acar Mfg. Co., New York City, and 100 flats to be furnished by the Magor Car Co. for the United Fruit Co., New York.

The American Locomotive Co. has received an order from the Delaware & Hudson for one locomotive and from the Richmond Fredericksburg & Potomac for six. The Chesapeake & Ohio is inquiring for five.

New railroad car inquiries in October aggregated 8200, as compared with 11,000 in the previous month, and

awards amounted to 800, against 1200 in September. The larger inquiries involved 2500 cars for the Pennsylvania lines, and the outstanding order was 3000 cars for the Wheeling & Lake Erie. Locomotive awards aggregated 133.

Seeks Mill Pipe

Inquiries Reach 79,000 Tons but Only 1000 Tons Have Been Placed

Pittsburgh, Nov. 2.—Unlike the market for other lines, that for iron and steel buttweld and lapweld pipe continues to show an increase in inquiries which are greatly in excess of output. This situation has been plainly reflected in a large inquiry made by the Prairie Pipe Line, a subsidiary of the Standard Oil Co., which has been seeking about 240 miles or 31,000 tons of 12-inch pipe, and 100 miles or 10,000 tons of 8-inch pipe, and has been able to place only about 1000 tons, the business going to a Pittsburgh, a Wheeling, W. Va., and a Youngstown, O., mills. It is said that some of it may be placed with a Chicago producer. Standard Oil subsidiaries also are in the market for 2-inch feed line pipe. Not only is the output of pipe inadequate to meet demands but there is a further restriction because threading capacity is considerably less than the output. An export inquiry involves about 400 miles, or approximately 38,000 tons of 10-inch and 8-inch pipe. While some mills report a full supply of cars for the past week, others complain of a shortage and still are piling tonnage. The Riverside works of the National Tube Co. are down on account of a lack of cars.

Prices Remain Steady

New York, Nov. 1.—While the tone of the eastern cast iron pipe market is weak, owing to softening in pig iron, no shading in prices has been reported. Manufacturers are well booked ahead over the end of the year, and it is likely that until inquiries for spring requirements come into the market there will be little if any change in the market. Municiple inquiries are scarce, and demand, generally, is at low ebb.

Rejecting Many Bids

Chicago, Nov. 2.—Taking bids on cast iron pipe is far from meaning that sales will follow, as many cities are rejecting the figures submitted by makers, deeming prices too high and preferring to wait in the expectation the latter may lower. Bids will be opened at Duluth, Minn., Nov. 6, on 132 tons, and at Fort Wayne, Ind., Nov. 8 on 133 tons. The American Cast Iron Pipe Co. has been awarded 300 tons at Owosso, Mich., and the National Cast Iron Pipe Co. has taken 500 tons at Cleveland and 50 tons at Springfield. O.

Stores Pipe Stock

Chicagoo, Nov. 2.—To expedite deliveries of small lots of cast iron pipe and specials the National Cast Iron Pipe Co., Birmingham, has established a storage stock in Chicago, containing 3 to 12-inch pipe and specials in class B and heavier.

Semifinished Market Soft

Resale Offerings of Rerolling Billets at $45 and Sheet Bars at $48—Little New Business Placed—Cleveland Mills on Reduced Basis

Pittsburgh, Nov. 2.—Resale lots of sheet bars and billets are being offered at prices considerably below those quoted by mills. It is reported an outside intrest is offering a round tonnage of standard soft 4 x 4-inch rerolling billets at $45 and that another seller is quoting as low as $48 on sheet bars. Independent mills generally appear to be quoting $55, Pittsburgh or Youngstown, a reduction of $5 a ton under their recent quotation. These mills have followed the policy of a prominent producer in naming this figure. An inquiry for 1000 tons has come out during the past week and mills have shown considerable interest, but so far as reported the tonnage has not been bought and it is believed if it is it will be at a price less than $55.

While producers generally are quoting $65, Pittsburgh or Youngstown, on sheet bars, they frankly admit they do not expect to get any business at this level and some of them think even $60 would not be attractive. The market is so dull it is not possible to get a clear idea of it.

A small amount of wire rod tonnage has been sold during the past week at $75, mill, for the soft grade. High carbon rods still are quoted at $85 to $100 but the maximum practically has disappeared.

A report is in circulation that an independent mill is quoting 2.45c on universal skelp, as compared with the general quotation of 3.25c, and considerable doubt has been expressed as to the correctness of this report. It is evident, however, that the level of 3.25c could be shaded considerably.

Forging Billets Wanted

Philadelphia, Nov. 1.—A good sized inquiry for forging billets is out from a consumer in this district but it is not yet known what prices can be done. The last price offered by makers was $65 Pittsburgh. Some rerolling billet business is under negotiation at $50 Pittsburgh but has not yet been closed.

Semifinished Output Less

Cleveland, Nov. 2.—As a result of suspensions of billet and sheet bar business, producers of semifinished material are operating their plants on a reduced basis. The McKinney Steel Co. now is operating seven of its open hearth furnaces. Reports of softness in semifinished prices are current but little new business is moving. A recent sale of 1000 tons of open-hearth sheet bars was placed at $60, Pittsburgh, the mill absorbing several dollars in freight to make this price.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.	†Lead New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oct. 27	15.00	42.25	6.875	7.05	33.00	6.375	43.00
Oct. 28	15.00	42.50	6.875	7.00	33.00	6.375	43.00
Oct. 29	15.00	42.875	6.875	6.95	32.00	6.375	43.00
Nov. 1	15.00	42.00	6.875	6.90	33.00	6.375	43.00
Nov. 2	15.00	42.00	6.875	6.90	33.00	6.375	43.00

*Future shipment from Singapore or London.
†Open market quotation.
‡Producers, price delivered, prompt and October; outside 16c to 16.12½c.

NEW YORK, Nov. 2.—Nonferrous metal prices showed a little more resistance to the downward pressure again this week, quotations in copper and zinc being at or below the average cost levels. Lead was steady and tin again moved upward in a fluctuating market. Business in all the metals continued slow, excepting an improved inquiry for copper at the low level of 15c. The market is closed today for election.

The decline in electrolytic copper prices to 15c, delivered, as quoted by leading producers, attracted considerable interest. Improved inquiry for casting copper and ingot metal, which also declined, was evident, makers of these descriptions noting more activity than in some months. The brass and copper rolling mills, however, still are under handling cancellations than new business and have not been buying heavily, regardless of price. A lot of 400 tons sold on the metal exchange Nov. 1 at prices ranging from 14.70c to 14.87½c, f.o.b. refinery. Some interest has been shown in first quarter copper, producers quoting January 15.12½c; February 15.25c. Casting copper makers have been quoting 14.62½c. Lake copper was quoted 15.25c.

The zinc market eased a little further, business being reported Nov. 1 at 6.85c, East St. Louis, for prompt shipment. The London market also has been easy, but remains a little too high relatively to permit import transactions. The Joplin zinc ore field will resume Wednesday after a two weeks shutdown to curtail supplies, but will limit production henceforth to 7000 tons weekly, as against 10,000 to 11,000 tons previous to the shutdown. Seven large smelters continue closed or practically closed by disagreement with their labor over wages scales and most of the other smelters are gradually blowing out some of their retorts.

The tin market has been irregular. Heavy supplies in this country made New York again the cheapest world market to buy in on several days recently and British houses bought futures here. American consumers have shown little interest. The statistics issued by the metal exchange today showed a decrease of about 500 tons in October, but stocks and landing still amounted to 3191 tons. Deliveries during the month amounted to 3415 tons. The London tin market recovered briskly with the approach of and final settlement of the British coal strike, regaining practically all of the £32 lost in discounting that development.

The lead market has been dull, with prices ranging from 6.75c to 7.00c New York, and 6.62½c to to 6.75c East St. Louis. These prices prevailed in the outside market, with resales of considerable tonnages by consumers a factor in making the market. The leading interest continued to quote 7.25c, New York. Cost of import from abroad has been about 7.25c to 7.50c, c.if. The London market has been well supported, reflecting the heavy sales for American account and decrease in stocks there.

The antimony market has been dull and weak, wholesale lots being obtainable at 6.37½c, New York. The import cost has been about 6.50c, New York, varying with the daily fluctuations in silver.

May Release All Open Top Cars

Interstate Commerce Commission Frees 4000 Coal Carriers Daily from Northwest Fueling Service and Is Expected To Remove Ban on High-Side Equipment, Affording Relief to Steel and Other Trades

WASHINGTON, Nov. 2.—Now that the interstate commerce commission has wholly lifted its service order compelling the movement of 4000 cars of bituminous coal daily to Lake Erie ports for the Northwest, the only service order or priority remaining is that diverting to the coal trade all open-top cars with sides 36 inches or more in height. The best opinion is that this order will be rescinded within a week or 10 days at the most. The exact date depends largely upon the weather and the rapidity with which the Middle West is coaled. This will greatly relieve the steel industry from traffic troubles.

Suspension of the Northwest order followed the tactics of coal consumers in allowing upper lake docks to get congested in the hope this condition would reduce prices. Feeling to an extent that the Northwest, like the public utility interests, no longer should make use of government protection for a purpose other than for which the orders were originally intended, the commerce commission has withdrawn from the field. To Nov. 1 Great Lakes shipments of bituminous coal this season had totaled slightly over 20,000,000 net tons, compared with 20,409,000 tons at this time in 1919 and 25,108,000 tons at this time in 1918. It is the opinion of the commission all danger of a fuel shortage has been eliminated, and that once Middle West consumers have been accorded 7,000,000 or 8,000,000 tons more, the normal car supply will suffice, and all open-top cars may safely be released for other commodities.

Every week sees the railroads nearer normal, and more efficient handling of cars as well as more expeditious and heavy loading seem apparent. In the week ended Oct. 16 the railroads loaded 1,005,663 cars of revenue freight, compared with only 972,078 cars in the corresponding week of 1919 and 927,134 cars in the corresponding week of 1918. In the week ended Oct. 9 the roads loaded 1,009,787 cars of revenue freight. The record for loading is 1,011,000 cars a week. In the week ended Oct. 16 the roads loaded 14,139 cars of coke, against 8435 cars in the same week of 1919; 227,642 cars of coal, against 217,416 in the same week of 1919; and 76,534 cars of ore, against 53,334 in the same week of 1919.

One reason why open-top cars have been short is seen in the report of the interstate commerce commission which shows that on Oct. 1 there were 75,000 bad-order cars on various railroads, or 7.6 per cent of the total owned. Since the railroads are aiming at not more than 4 per cent of bad-order cars, the open top condition is serious. Were these 75,000 cars in serviceable condition, they would carry 3,750,000 tons of coal per trip. The eastern district is the worst off in this respect, having 9.5 per cent of its open-top cars out of service. For various districts these figures are:

	No. open-top cars owned	No. bad-order cars	Per cent bad-order
Eastern	282,923	26,877	9.5
Allegheny	320,031	18,562	5.8
Pocahontas	85,807	7,637	8.5
Southern	107,687	8,134	7.6
Northwestern	59,854	3,653	6.1
Central western	101,056	7,624	7.5
Southwestern	44,254	2,436	5.5

Talk of prosecuting car distributors and other railroad employes for alleged forgery of interstate commerce commission orders and for accepting bribes for placing coal cars has recurred though it is said much of this practice falls beyond the reach of the Lever act and the department of justice. In some cases it is said the number of cars granted by special permits was doubled and tripled by substitution of larger figures. This has led to the belief some collusion was necessary within the commission itself. However, prosecution is still in the talk stage.

The commission has announced approval of a loan of $6,000,000 to the Northern Pacific railroad for the purchase of additional motive power, freight cars and for improving its way and structures. The railroad is required to finance $10,000,000, making the total investment in improvements $16,000,000. More protection for short lines is in sight as a result of the commission sustaining the protest of the American Short Line association against the proposal of the trunk lines to abolish a per diem rental for foreign cars of 60 cents per car with a reclaim allowance of two days' free time. The railroads have, since the end of federal control, abolished the free time and increased the per diem rental to 90 cents per day. A new arrangement will be entered into, probably a compromise between the old and new schedules. The commission also has called a hearing at Helena, Mont., on Nov. 15, to consider the refusal of that state to raise intrastate rates to the same levels as interstate ones in western territory.

Ferro "Dumping" Action Must Wait Turn

Washington, Nov. 2.—Although attorneys for the federal trade commission assert progress is being made in working up the case against Crocker Bros., Rogers, Brown & Co., Frank Samuel and C. W. Leavitt & Co. for alleged dumping of ferromanganese in the United States in violation of the federal antidumping statute, it probably will be several months at the earliest before the trial is had. The case must wait until actions previously filed are disposed of, it is stated. The trade commission issued its complaint, following protests by domestic producers of ferromanganese that the English article was being "dumped" in the United States to prevent a ferromanganese industry being built up or maintained here. All of the respondents last May filed denials with the commission, and the next step is the setting of the date of the trial by the commission.

Trade Board Abandons Cost Reporting

Washington, Nov. 2.—The federal trade commission announced today that it has abandoned its practice of reporting cost figures on iron, steel and coke production, and will not seek such figures, even on a voluntary basis, until the Supreme Court finally rules on its authority. This action is equivalent to a total surrender by the commission, and it is believed that cost reporting will be abolished permanently.

Bituminous operators, like iron and steel producers, were so rapidly ceasing to report their production costs that the commission today in issuing its preliminary report on coal mining costs for June stated no further reports will be given out. This step was threatened when the report for May was issued, the commission warning at that time that so few operators were reporting that such cost figures as the commission was able to compile were fast getting to the point where they were not representative, and this fear has been borne out.

During the fuel administration

period as high as 2482 bituminous coal operators reported their production costs to the trade commission. This number dropped to 1589 in January, 1431 in February, 1081 in March, 812 in April, 680 in May, and now to 555 in June. In the Maynard Coal Co. case the coal industry challenged successfully to date the authority of the commission to require the submission of private cost data. Then followed the decision adverse to the commission in the injunction issued by the District of Columbia supreme court at the instance of 22 iron, steel and coke producers. Enjoined in both actions, the trade commission last spring put cost reporting on a voluntary basis and appealed to the industry to co-operate, but the appeal has failed.

"The value of current coal cost bulletins depends entirely upon the relative quality of the figures contained therein," states the trade commission, "and when it appears that out of the total of operations an insufficient number of reports are made, the figures obtained fail to maintain their relative quality. This condition seems to have been reached, and publication of the monthly cost bulletins, on a voluntary basis, must cease with this issue."

The 555 bituminous coal operators who reported their costs for June gave their average sales realizations in that month as $3.44 a ton. Since their production cost f.o.b. mine averaged $2.70, the margin per net ton was 74 cents. Out of this 74 cents must come taxes, depreciation, selling expenses, interest, profit and similar items. In May the average sales return was $3.31 a ton and the cost $2.77, making the margin in May 54 cents a ton, or 20 cents a ton under the June margin. Of the $2.70 reported as the average production cost per ton in June, $2.02 represented labor costs, 31 cents general supplies and 37 cents general expense or overhead.

With the date set for asking modification of the Claire furnace injunction in the district supreme court in order that the mandamus suits against the Bethlehem Steel and Republic Iron & Steel companies could be prosecuted, now a month past, the trade commission has not yet taken any forward step in pressing its cases against the steel industry for refusing to submit the production cost reports. Some action may be taken toward the middle of November, it is stated.

Rejects Hog Island Bids

Washington, Nov. 2.—Two bids were received by the United States shipping board for the Hog Island shipyard, near Philadelphia, and both were rejected as being inadequate. The Barde Bros. Steel Co., New York, made an offer of $4,000,000, and the New Jersey Machinery Echange, Newark, N. J., offered $4,268,750. Hog Island cost the government almost $70,000,000, and the shipping board has unofficially set $20,000,000 as the minimum price. A check for $1,000,000, signed by J. N. and L. B. Barde, accompanied the Barde bid. It is probable bids will be advertised again.

Yards Building 331 Ships

Washington, Nov. 2.—Private American shipyards on Oct. 1 were building 331 steel vessels of 1,236,277 gross tons, compared with 345 vessels of 1,236,547 gross tons on Sept. 1, says the department of commerce. The largest number of ships was being constructed by the American Bridge Co., Ambridge, Pa., the number being 97. The Sun Shipbuilding Co., Chester, Pa., was second with 17 and the Federal Shipbuilding Co., Newark, N. J., third with 13. In point of tonnage, the Sun company led with 127,399 tons, while the Federal company was second with 77,000 tons and the Merchant Shipbuilding Corp., New York, third with 76,900 tons.

Chairman Benson of the shipping board is reported to favor the sale of the government's wooden fleet to foreign interests, chiefly South American ones, apparently no United States ship interests wanting any of them. Because the ship board now has only two members, no sales policy can be formulated at this time. Plans are now under way for the sale of one of the board's ship plants at Seattle. Recent reductions in operating expenses and personnel have reduced the board's costs at the rate of $1,600,000 a year, it is announced.

According to Lloyd's latest report, on Sept. 30 American shipyards were building 312 steel and wooden ships, with a gross tonnage of 1,772,193, against 961 steel and wooden ships, with a gross tonnage of 3,731,098, being built in United Kingdom shipyards. On Sept. 30, 1919, American yards were building 767, with a gross tonnage of 3,470,748, compared with 781 ships, with a tonnage of 2,806,773, on the ways in shipyards in the United Kingdom.

Roads Delay Export Rate

Washington, Nov. 2.—Effective date of new preferential railroad freight rates on iron and steel articles for export from Chicago to Atlantic ports has been deferred because New England and other eastern roads have not yet concurred in the new tariffs. On Oct. 23, however, new and reduced rates on export iron and steel articles from Chicago to the Pacific coast went into effect. These new schedules grant Chicago and Chicago territory lower rates to the west coast than from Pittsburgh and other eastern territory points. On billets, sheets, plates, bolts, tubing, angles, bars and other iron and steel articles the new rate from Chicago, Illinois, certain points in Indiana, Iowa, Missouri and Kansas is 71 cents per 100 pounds, compared with the old rate of 80 cents from both Chicago and Pittsburgh. On ferromanganese, pig iron, ferrosilicon and spiegeleisen the new rate from Chicago to the west coast for export is 65 cents, reduced from 73.5 cents, still effective for Pittsburgh and the East. On machinery the new rate is $1.335, against the old rate of $1.15, and on cast pipe and fittings the new rate is 80 cents, against 71 cents. In almost every iron and steel group the new rates to the Pacific coast for export maintain the old rates for Pittsburgh but reduce them for Chicago.

Operates Iron Mill

Kentucky Iron & Steel Co. now is operating the former plant of the Louisville Steel & Iron Co., Louisville, Ky., for the production of iron and steel bars, concrete reinforcing bars, etc., having acquired title to the property. The plant has been re-equipped by the new owners and is operating 100 per cent. The plant consists of eight puddling and two reheating furnaces, bar mills, etc. R Wilbur Tietjen is president; I. L. McCord, 114 Liberty street, New York, vice president; John J Bell, secretary and treasurer; and William McKenzie, superintendent of the mills.

Traffic League To Meet

The annual meeting of the Industrial Traffic league, with a membership of nearly 1000, and which represents a quarter of a million shippers of the country through commercial organization affiliations, is to be held in the Waldorf-Astoria, New York, Thursday and Friday, Nov. 18 and 19. The meeting will be of especial interest to shippers because of many changes of rates that recently have been made.

The Ingals Iron Works has taken out a permit to carry on $10,000 worth of repairs and rebuilding of its office building near the plant in Birmingham, Ala.

October Pig Iron Output Higher

Average Daily Production Is 2100 Tons Better Than That for September, All of Which Is Due to Nonmerchant Furnaces — 28 Stacks Are Blown Out, Reducing Total to 289

AGAIN reflecting the improved stack activity observed in September, the October production of coke and anthracite pig iron totaled 3,293,543 tons, thereby taking second place in monthly output for the year. The improvement is partially attributable to the one-day longer month of October as well as the large number of furnaces in operation during the early part of the month. Many stacks were blown out or banked in the last few days of October but the effect on production was not materially felt in the October tonnage.

The total production in October of 3,293,543 tons was a gain of 169,235 tons over the September output of 3,124,308 tons. When reduced to an average daily basis, the October production represents 106,243 tons, a gain of 2100 tons over the 104,143 tons of September.

Nonmerchant or steelworks furnaces produced 2,434,511 tons, compared with 2,277,607 tons in September. This is a gain of 156,904 tons. On an average daily production basis, the nonmerchant output is at the rate of 78,532 tons per day, 2612 tons better than the 75,920 tons per day of the previous month. Merchant iron with 819,518 tons registered a gain of 21,407 tons over the September figure of 798,111 tons. On the daily basis, however, merchant iron was produced at the rate of 26,436 tons or a loss of 168 tons from the September production of 26,604 tons per day. Steelworks furnaces, therefore, were responsible for the improved showing of October.

In contrast to the improved stack activity of September when 11 stacks were blown in, thereby raising the total to 317 stacks, during October the number of active stacks slumped severely. Twenty-eight furnaces were either blown out or banked, thus reducing the number in blast on Oct. 31 to 289 stacks, the lowest number operating since April, 1920. Three merchant furnaces were blown in and 19 blown out making a net loss for this class of 16 furnaces. Three steelworks furnaces were blown in and 15 blown out with a net loss of 12 furnaces. The slackening of activity, therefore, is well balanced between merchant and nonmerchant stacks.

Ferromanganese production was 25,781 tons, a loss of 1916 tons from the September figure of 27,697 tons. Spiegel production also showed a loss. The October tonnage of 9000 tons was a loss of 2849 tons from the September output of 11,849 tons.

Stacks blown in during October were: In Ohio: McKeefrey, McKeefrey Iron Co. In Pennsylvania: One Carrie, Carnegie Steel Co.; Earlston, Joseph E. Thropp; the new 600-ton stack, Midland No. 2, Pittsburgh Crucible eSteel Co. In Virginia: One Low Moor, Low Moor Iron Co. In Alabama: Bessemer No. 1, Tennessee Coal , Iron & Railroad Co.

MONTHLY PRODUCTION

	1920	1919	1918
January	3,012,373	3,306,279	2,403,227
February	2,994,257	2,943,347	2,318,202
March	3,375,768	3,088,023	3,209,996
April	2,752,670	2,474,374	3,273,355
May	2,991,825	2,107,729	3,451,884
June	3,046,623	2,114,028	3,316,148
Total 1st half	18,163,516	16,037,988	17,972,852
July	3,043,918	2,424,212	3,408,584
August	3,145,536	2,742,081	3,378,479
September	3,124,308	2,480,790	3,413,223
October	3,293,543	1,864,424	3,482,392
November		2,407,369	3,347,844
December		2,626,074	3,434,114
Total 2d half		14,544,950	20,464,636
Grand total	30,770,821	30,578,730	38,437,448

AVERAGE DAILY PRODUCTION

	1920	1919	1918	1917	1916
Jan.	97,173	106,654	77,523	101,930	102,319
Feb.	102,904	105,270	82,794	94,641	106,157
Mar.	108,895	99,614	103,548	105,026	107,343
April	91,754	82,479	109,112	110,936	107,517
May	96,510	67,991	111,351	110,119	108,535
June	101,553	70,467	110,538	108,675	107,127
July	98,190	78,200	109,954	107,659	103,907
Aug.	101,468	88,453	108,983	104,483	103,156
Sept.	104,143	82,692	113,774	104,691	106,935
Oct.	106,243	60,142	112,335	106,332	113,167
Nov.	.....	80,244	111,595	106,620	110,593
Dec.	.....	84,711	110,602	93,077	102,715
Av.	100,883	83,910	105,293	104,562	106,610

DIVISIONS OF PRODUCTION

1919	Merchant	Non-merchant	Spiegel	Ferro-manganese	Other ferro
Jan.	785,384	2,480,789	15,926	17,212	6,968
Feb.	740,863	2,169,640	6,309	21,221	5,308
March.	740,921	2,315,258	6,146	20,586	5,112
April.	593,655	1,856,802	2,778	10,175	4,964
May	514,002	1,574,679	4,747	10,883	3,418
June	436,359	1,647,085	13,361	9,860	7,363
July	493,505	1,909,537	7,830	10,874	2,466
Aug.	518,425	2,175,517	8,179	9,252	708
Sept.	567,608	1,891,418	4,656	17,108	...
Oct.	574,519	1,269,667	5,074	15,164	...
Nov.	625,925	1,760,754	4,500	15,464	726
Dec.	653,792	1,954,831	4,508	11,210	1,733
Total	7,274,958	23,005,983	84,014	175,009	38,766
1920					
Jan.	716,574	2,267,747	5,903	18,054	4,095
Feb.	735,707	2 215,079	11,755	18,015	3,701
March.	863,167	2,474,018	15,472	19,203	3,908
April.	761,331	1,958,535	6,600	18,036	8,168
May	808,751	2,140,346	10,744	21,536	10,448
June	769,236	2,233,565	8,510	26,870	8,442
July	791,440	2,209,128	6,925	28,347	8,078
Aug.	823,495	2,276,433	8,333	28,642	8,633
Sept.	798,111	2,277,607	11,849	27,697	9,044
Oct.	819,518	2,434,511	9,000	25,781	4,733
Total	7,887,330	22,486,969	95,091	232,181	69,250

OCTOBER PIG IRON

States	No. of stacks	No. in blast last day of month: Oct	Sept.	Total tonnage made: Merchant	Nonmerchant	Totals: Oct.	Sept.
Pennsylvania	101	110	122	246,703	970 012	1,216,715	1,168,127
Ohio	70	60	65	156,958	603,178	760,136	705,666
Alabama	43	23	25	112,724	83,945	196,669	107,503
Virginia	19	9	10	35,340	.....	35,340	33,988
New York	29	29	23	91,891	143,830	235,221	228,971
New Jersey	5	2	2	8,431	.....	8,431	9,153
Illinois	25	20	20	59,160	235,971	295,131	267,535
Colorado	6	3	3				
Indiana	16	13	13				
Maryland	6	6	6	36,704	304,409	341,173	311,144
Wisconsin	6	3	3				
Kentucky	7	5	5				
West Virginia	5	5	5				
Tennessee	16	8	8	38,262	46,601	84,863	93,614
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	3	3	33,785	46,565	80,350	60,017
Michigan	3	3	3				
Missouri	1	1	1				
Spiegel and ferro—all states	.	.	.			39,514	48,590
Totals	485	289	317	819,518	2,434,511	3,293,543	3,124,308

British Miners Favor Return to Work

(Staff Cable)

London, Nov. 3.—The ballots of the striking British coal miners are generally favorable to the acceptance of the government's proposal for a settlement, and it appears that the miners will return to work at an early date. Blast furnaces and steelworks, however, continue inoperative.

Detroit's industrial payroll has been reduced from 310,000 as of April 7 to 235,000 as of Oct. 27, through curtailment of operation in all lines.

British Strike Nears Settlement

Miners' Officials Recommend Acceptance of Government's Terms Until National Wages Board Is Established—Only 85 of 290 Furnace Stacks in Operation—October Output Shows 30 Per Cent Loss—Germany Reduces Steel Prices

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-4 Caxton House, Westminster, S. W. 1

LONDON, Nov. 1.—Out of 290 blast furnace stacks in operation before the coal miners went out on strike, approximately 85 still are active, 95 have been blown out and the remainder has been banked. Production of pig iron in Great Britain in October will show a decline of 30 per cent as a consequence of the strike.

The miners' officials have decided to submit to a vote of the men the government's terms of 2 shillings advance per shift, based on increased output, and have recommended the acceptance of the terms as a temporary expedient until a national wage board is established. In accordance

Sterling—$3.45

with the government's proposal the output of last September is to be the average on which the sliding scale is to be based, and wages are to be adjusted automatically Jan. 3 and 31, 1920, and every four weeks thereafter. It is hoped that mining will be resumed Nov. 8.

While a more optimistic feeling prevails in regard to the prospective settlement of the strike, further shutdowns of iron and steel plants are anticipated before it is settled. Even if the miners resume work Great Britain appears to have been saddled with closed shop domination. The cost of the strike it is estimated will reach £35,000,000 ($120,750,000) and the loss of coal production will total 15,000,000 tons. Nevertheless, Great Britain appears to be bearing up well under the strain.

Market transactions are awaiting the settlement of the strike. Meanwhile, the stringency due to the shortage of foundry iron is increasing. Inquiry for steel is fair, but few sales are recorded. The sheet market reflects more weakness. Plant shutdowns are enabling the railways to clear away piled tonnages.

Belgian makers are active sellers in the British market. They are offering billets at £15 ($51.75) c.i.f. Thames and bars at £21 6s ($73.47), Birmingham. German steel prices have been reduced about 500 marks per ton.

Belgium in Possession of British Iron Markets

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street.

BIRMINGHAM, Eng., Oct. 22.—This has probably been the blackest week within the memory of the British iron trade, due to the coal strike. The expectation that a number of the miners would decline to follow the crack of the union whip proved to be entirely unfounded. Thousands of miners viewed the stoppage with disfavor, but at the last moment their leaders prevailed on the men to stand together. All the pits of the country are stopped.

At present Premier Lloyd George is in consultation with the miners' leaders, and everyone is hoping that new negotiations will result. On the whole, the situation looks a shade more hopeful.

In the meantime, the iron and steel trades have received a knockout blow. The Tees-side district is almost completely shut down. In that district there is a group of big works which must have continuous trainloads of coal to keep them in operation. They are all shut down, and all the blast furnaces are stopped, with few exceptions. Some are working on slack blast, partly because the linings are

Sterling—$3.45

weak and ironmasters do not care to run the risk of damping down. The slack blast method also is preferred because a furnace can be more quickly restored to full working. One furnace in that district has been blown out completely, as have a number in other districts. Some of these furnaces, being of obsolete construction, will not be restarted.

The stoppage in the iron and steel industry is practically universal. In Sheffield the estimate is that 100,000 men will be walking the streets by the end of the week. There will be at least 25,000 men out in Barrow. In the Scotch district 500,000 will be out tomorrow, and the unemployed in South Wales, either connected with the iron and steel industry or dependent upon it will run into several hundred thousands.

It is the same in the Black country districts, with all big works; but a few of the smaller works possibly can operate throughout next week. The shipbuilding yards in the north of Engiand will be assisted somewhat by the gradual distribution of the steel accumulated there, largely as the result of the railway congestion, and some thousands will be saved for a time from unemployment. But the general stoppage is only a matter of days, and the outlook is considered about as black as it can be. In South Wales some of the results will be permanent, as a number of the dismissed steelworkers are reported to have made arrangements to emigrate either to Canada or America.

The results are especially calamitous because of the rapid fall in prices and the formidable character of foreign competition. From the price point of view, Belgium is in possession of the market. At Birmingham this week Belgian steel billets were on offer at £16 5s ($56.06), as against the British price of £21 10s ($74.17). In some previous strikes, steel prices have hardened, but the conviction is now so general that a big slump has commenced that almost every firm is receiving cancellations. This applies especially in the Black country, where they are coming in by every mail. Some works which a week or two ago had large reserves of business on their books have shut down this week, with hardly an order

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

SEMIFINISHED STEEL

	£	s	d	$
Billets, soft steel	20	10	0	70.73
Sheet bars	21	0	0	72.45
Wire rods	30	0	0	103.50

FINISHED STEEL

Steel bars England, ⅝ to 3 inch	29	0	0	100.05
Ship plates, England	27	0	0	93.15
Ship plates, Scotland	27	0	0	93.15
Beams, England	24	0	0	82.80
Sheets, black, 24 gage	34	10	0	119.03
Beams, Scotland	24	0	0	82.80
Sheets, galvanized, 24 gage	38	0	0	131.10
Rails, 60 lbs. and over	25	0	0	86.25
Tin plate, base box, 108 lbs.	2	2	0	7.25
Steel hoops	34	10	0	119.03

PIG IRON*

West Coast Hematite	14	15	0	50.89
Hematite, East Coast Mixed Numbers	13	0	0	44.85
Middlesborough Basic	11	15	0	40.54
Middlesborough No. 3	11	5	0	39.81
No. 3 Foundry, Derby, Leicester, Nottingham	14	0	0	48.30
No. 3 Foundry, Northamptonshire	12	7	6	42.69
No. 2 Foundry, Staffordshire	13	17	6	47.87
No. 3 Scotch Foundry	13	10	0	46.58
Ferromanganese, 80 per cent.	37	0	0	127.65

COKE

Yorkshire furnace	3	5	0	11.21
Yorkshire foundry	4	5	0	14.66

French Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Hematite, Lorraine	705 to 765	45.83 to 49.72
Foundry, Longwy, 3 per cent Si., sand-cast	450	29.25
Foundry, Longwy, 3 per cent Si., chill-cast	500	32.50
Foundry, Longwy, 2 per cent Si., sand-cast	447	29.06
Foundry, Longwy, 2 per cent Si., chill-cast	480	31.20

COKE

French furnace	175	11.38
German, Belgium and British furnace	175	11.38

SEMIFINISHED STEEL

Blooms	773	50.25
Billets	773	50.25
Sheet bars	1023	66.50

FINISHED STEEL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	120	7.80
Angles	120	7.80
Normal beams and profiles	115 to 120	7.48 to 7.80
*Plates bridge and tank, 5 millimeters and thicker	164½	10.69
*Sheets, black, 3 millimeters	172 to 179	11.18 to 11.65
Bars, cold-drawn, 40 to 60 millimeters round	220	14.50

Pig iron prices are f.o.b. furnace; semifinished steel prices f.o.b. works; finished steel prices, according to the schedule of the Paris Consortium of Iron and Steel dealers, delivered, except (*) which are from schedule of the Comptoir des Toles.

Belgian Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Foundry, 3 per cent silicon, Belgium	500 to 525	35.00 to 36.75
Foundry, 3 per cent silicon, Luxemburg	550	38.50
Basic, open-hearth, Belgium	575	37.38
Basic-bessemer, Belgian	475 to 500	32.25 to 35.00
Basic-bessemer, Luxemburg	525 to 550	36.75 to 38.50

SEMIFINISHED STEEL

Blooms	675 to 750	47.25 to 52.50
Billets	750 to 775	52.50 to 54.25
Sheet bars	800 to 825	56.00 to 57.75
Wire rods	1150	80.50
Standard rails	925 to 950	64.75 to 66.50

FINISHED MATERIAL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	92½	6.48
Normal beams and profiles	92½ to 95	6.48 to 6.65
Plates, 5 millimeters and thicker	125	8.75
Plates, 3 to 5 millimeters	135	9.45
Sheets, black, 3 millimeters	137½	9.63
Plain wire	385	26.95
Sheets, galv., 1 millimeter	270	18.90

*Sold on same basis as semifinished material.
†Plus 50 francs for export.
All prices f.o.b. furnace or works, except finished material, for which delivered prices are quoted.

left. Up to a few days ago French agents were warning English customers that deliveries could not be guaranteed, as there was a probability of a miners' strike on Nov. 1 for 5 francs (35 cents) per day increase in wages. It was understood that the Belgian miners proposed to unite in this movement. But it was announced later that the trouble was settled, and that production in those districts will go on as usual. Belgian iron for nut and bolt making is coming in large quantities into the Black country at £22 ($75.90) per ton, or about £7 ($24.15) to £8 ($27.60) below the local quotation. A good deal of Belgian material is also being used there for the making of locks. It is stated that the Belgian sizes do not suit the British consumer very well, and there is some irregularity in rolling. But this is more than counterbalanced by the very much lower price.

Some American wire rods have been sold in Birmingham at £28 ($96.60) per ton, as against the British figure of £30 ($103.50). With regard to steel, British manufacturers state their readiness to produce cost sheets to show that the billets they make cannot be produced under £22 ($75.90) per ton. In normal times there would be a good opening here for wire rods; but the Birmingham wire mills are likely to be stopped within the next few days for want of coal.

The galvanized sheet and tin plate trades share in the general dislocation, but there is practically no demand in the way of large orders, and the Welsh quotation is £38 ($131.10) per ton. A few dealers in the Midlands who are able to sell from stock claim to be getting £40 ($138) and upwards. Tin plates are easier at £2 4s ($7.58) for prompt supplies f.o.t. works. It is said that some offers have been received as low as £2 2s 6d ($7.33). Most of the tin plate works are idle, and the stoppage will be general by the latter part of the week.

Middlesborough Export Tonnage Gains

European Staff Correspondence

MIDDLESBOROUGH, Eng., Oct. 5.—Unsettled conditions prevail in the British export trade in iron and steel due to the trouble with the coal miners. At the same time, there has been a slight modification in export prohibitions.

Sterling—$3.49½

Silicon iron is being offered to foreign buyers who are able also to secure supplies of mottled and white iron, at £13 7s 6d ($46.74) and £12 7s 6d ($43.25) for the respective

grades for export oversea. Shippers anticipate further relaxations in these export restrictions.

Home consumers of Cleveland pig iron still absorb supplies, but are in a much better position regarding their needs than during the first half of the year. Sales of hematite are reported to buyers from neutral countries at £14 ($48.93). Shipments of East coast hematite mixed numbers are being made to Belgium, France and Italy of £13 7s 6d ($46.74) per ton. Some sales of ferromanganese are recorded and a shipment of about 3000 tons to the United States has been made.

Slackness prevailed in the export trade of the Tyne early in the month, but there was a better tone noticeable later. Allied countries are insistent for coal deliveries which are much in arrears. Other continental buyers are also in the market. Signs of greater activity are evident in inquiries for cross-channel trade, but few definite bookings are taking place. There is delay in getting vessels away at present with their full cargo and some weeks must elapse before coal for export will show improvement.

Ample shipping is available for iron and steel exports but the demand for space is easy. Freights show a slight decline to Antwerp, Calais and Rotterdam. The following are the quotations: Antwerp, iron, 15s; steel, 20s; Calais, iron, 17s 6d; steel, 22s 6d; Cologne, iron, 27s 6d; steel, 32s 6d; Dieppe, iron, 25s; steel, 30s; Hamburg, iron, 27s 6d; steel, 35s; Rotterdam, iron, 15s; steel, 20s; Rouen, iron, 25s; steel, 30s; Genoa, iron, 40s; and Capetown, iron, 70s; steel, 70s.

The freights to the following destinations are plus 10 per cent c. t. and receive immediate or deferred rebates: Hong Kong, iron, 65s; steel, 65s; Japan, iron, 65s; steel, 65s; Straits Settlement, iron, 65s; steel, 62s 6d; Pt. Swetterham, iron, 70s; steel, 67s 6d; Java, iron, 67s 6d; steel, 67s 6d; Australia, iron, 60s; steel, 60s; New Zealand, iron, 58s 9d; steel, 58s 9d; Algeria, iron, 100s; steel, 100s; Greece, iron, 140s; steel, 140s; and Turkey, iron, 160s; steel, 160s.

The total tonnage of pig iron and steel shipped in September from Middlesborough reached 74,224 tons; of this, 23,686 tons was delivered coastwise. For the nine months ending September the iron and steel tonnage shipped from Middlesborough port totalled 629,200 tons of which 370,000 tons was pig iron.

During the month 33 countries were in the market for materials. The largest buyer was Belgium. Over 10,000 tons of pig iron was shipped on Belgian orders, India ranking next with over 9000 tons. Trade with Italy has been interrupted, due to caution engendered by the revolutionary outbreaks. Quantities of less than 500 tons of iron and steel have been shipped to Germany, Algeria, Ceylon, Finland, Greece, Mesopotamia, Malta, Mauritius, Norway, Sweden, Syria, Straits Settlement, Turkey, Uruguay, and New Zealand. The following tabulated statement shows how the iron and steel tonnage in September from Middlesborough was distributed:

	Pig iron	Rolled iron and steel	Total
Argentine	21	8,826	3,847
Australia	60	984	1,044
Belgium	10,248	44	10,292
British East Africa	.....	549	549
Cape Colony	.....	1,520	1,520
China	.....	720	720
Denmark	1,550	200	1,750
Egypt	.....	594	594
France	1,023	181	1,204
Holland	702	319	1,111
Hong Kong	.....	517	517
India	.....	9,045	9,045
Italy	4,100	220	4,320
Japan	500	2,564	3,064
Natal	100	1,084	1,184
Persia	.....	892	892
Russia	.....	1,340	1,340
United States	5,050	.....	5,050
Total, including shipments under 500 tons	44,134	30,090	74,224

The foreign ore imported into the Tees in September shows a noticeable decrease compared with August when 198,131 tons were discharged. The September total reached 144,191 tons. Ore freights are firmer. The Bilbao-Middlesborough rate is 18s ($3.14) per ton. Best Rubio ore is 50s ($8.73) an advance of 1s ($0.174) over the quotation in July.

Exports of iron and steel and products in September as compared with those in the same month last year, expressed in tons, follow:

	1919	1920
Pig iron	32,380	43,357
Iron (wrought), bars, angles, etc.	2,980	4,836
Steel bars, etc.	19,752	23,401
Hoops and strips	3,838	6,117
Plates (not under ⅛ in.)	14,636	15,757
Plates and black sheets	10,659	9,959
Black plates	6,196	1,893
Galvanized sheets	22,304	29,101
Tinned plates and sheets	25,443	20,543

French Iron and Steel Prices Reduced

European Staff Correspondence

PARIS, Oct. 15.—The long looked for drop in prices of French iron and steel came this week, having been preceded a fortnight by the decline in metallurgical coke and a few days by that in pig iron. The results are due largely to the efforts of the French minister of public works to reconcile the various interests concerned.

Blast furnace interests in return for the drop of 75 francs ($4.87) per ton on coke, first announced a reduction of 150 francs ($9.75) on pig iron.

Franc—$0.065

Finished and semifinished products followed, the largest variation being noted with respect to plates and sheets, on the latter as much as 350 francs ($24.25) per ton.

The new prices are applicable immediately, and thus they affect stocks in warehouses as well as new product.

The reductions are far in excess of that which was applied to coke, and it is more than probable that various minor adjustments will be made in the immediate future, depending largely on the attitude of Belgium and Germany and the Saar with reference to attempts to penetrate the French markets.

If the new price scale gives the expected impetus to trade in general there is no question but that it will still be a sellers' market as the need is great for all that can be offered. Only the probability of better prices in the near future can be said to cloud the situation.

Belgium Expected To Make Further Cuts

European Staff Correspondence

BRUSSELS, Oct. 15.—The Belgian market has not as yet been affected by the recent readjustment of prices of metallurgical products in France. Belgian producers probably will not delay their reply very long. There promises to be a lively competition in the European export market which will not wait until home needs are wholly supplied. The only notable change in Belgian prices this week is with

Franc—$0.07

respect to basic bessemer pig which has dropped 25 francs ($1.75) per ton.

General trade conditions are somewhat easier but stocks are accumulating, and when the price adjustment comes a steady flow of business is looked for. Future delivery orders are being solicited and obtained in the rolling mills of the Liege district in particular, where reconstruction has progressed satisfactorily. It is this that will prove the force of Belgian metallurgy in the struggle which is to come in the European field. The fact that Belgium is so largely dependent upon French ore is not likely to be an insurmountable difficulty as it is unthinkable that France would seek to ration Belgium in this necessary raw material regardless of how fierce the competition may become.

Will Erect Mechanical Puddling Plant

A mechanical puddling plant is to be erected by the Youngstown Steel Co., Youngstown, O., on a 50-acre site, a short distance north of Warren, O., recently purchased. The site is along the Mahoning river and is served by the Baltimore & Ohio and Pennsylvania railroads.

While plans call for 16 puddling furnaces with a combined daily output of 1000 tons and eventually two blast furnaces, only four puddling units will be included in the initial installation. Construction work will be started about April, 1921. The initial outlay is placed at $1,800,000. E. L. Ford, president, and T. M. Phillips, first vice president and general manager of the Youngstown Steel Co., have been experimenting with the mechanical process of puddling iron for several years. Present holdings of the Youngstown Steel Co. include coal lands, real estate and securities. H. C. Bixler is vice president and engineer and J. P. Suiter secretary and treasurer. Formerly the company owned the Tod furnace of the Brier Hill Steel Co.

Abandon Plan To Ship Pig Iron by Barge

Abandonment of a plan to ship pig iron by way of the New York state barge canal from the Buffalo furnaces to consumers in the East was announced at Newark, N. J., Oct. 27 at a joint meeting of the Newark Foundrymen's association and the Gray Iron club of New York. C. J. Fagg, traffic commissioner of the Newark chamber of commerce, who has been investigating the possibilities of this method of transportation, asserted that developments arising since the plan was first proposed made it inadvisable and his suggestion that the proposition be dropped was generally accepted.

At the time the investigation was begun there was a marked shortage of cars. Water rates hovered around $2, as compared with rail rates of $2.60. This made the proposition doubly attractive. Shortly after, however, grain interests of the Northwest chartered practically 65 per cent of the barges, resulting in such a shortage of bottoms for other commodities that on one lot of 1000 tons of pig iron that came through a premium of $2 a ton was paid.

Later the water rate was increased to about $3.40 a ton, as compared with the increased rail rate of $3.65. Handling charges at the docks, it was ascertained, would amount to 80 cents a ton, and trucking charges about $1, making a total expenditure of $5.20 a ton for material shipped by way of the canal. Charges for rail shipments, on the other hand, would cost approximately $3.90, there being but about 20 to 30 cents to be added to the rate for handling. This in conjunction with a steadily increasing number of available cars, Mr. Fagg pointed out, made it highly advantageous to have shipments made by rail.

An interesting address was delivered by James H. Tregoe, secretary of the National Association of Credit Men, New York. He discussed general business conditions from the standpoint of the economist. He traced developments leading to the present dull situation, and expressed the opinion that no great amount of activity should be expected before spring.

Mr. Tregoe asserted that the federal reserve bank had begun what would have proved in his opinion an orderly process of deflation, but that three later developments combined to upset this orderly process. First came a reduction in prices by a large retail merchant, then a widespread propaganda by the newspapers for lower prices, and finally a "buying strike" on the part of the general public.

He expressed the opinion that buying now should be the order of the day. He warned against overcharging, and warned with equal vigor against attempting to drive a "hard bargain." He appealed strongly for all to keep, above everything else, their faith in the future of American business.

New England Manufacturers Meet in Boston

Transportation questions as they affect New England industries formed the principal topics of discussion at the annual meeting of the Associated Industries of Massachusetts held during the past week at the Copley Plaza hotel, in Boston. Thursday was given over to freight rates and shipping questions. John D. Hashagan, traffic manager of the American Glue Co., argued for further coastwise lines, pointing out that the recently established line from Boston to San Francisco has been eminently successful in its operation.

The rate situation was discussed at considerable length by Benjamin Campbell of the New York, New Haven & Hartford railroad. One of the features of this paper was the outline of the 10 class scale of rates which briefly means the grouping of all commodities into one of ten classes for the establishing of rates. On Friday Frank A. Vanderlip led the discussion on export questions stating that it was speculation rather than good manufacturing policy to depend upon exchange improvements in our relations with foreign countries. England he said is facing a rather serious time. Her business, built up on iron and coal, is at least temporary without this foundation, the speaker said.

Ora L. Stone, general manager of the Associated Industries, gave a comprehensive report of the years' work and treated in considerable length the problem of the immigrant as it applies to this country and particularly to Massachusetts. Realization of the vital problem of educating the immigrant is what Mr. Stone predicts as the only solution. A new executive committee elected by Associated Industries includes the following: Charles L. Allen, president and general manager of the Norton Co., Worcester; Lewis E. Bellows, president, Walden Worcester Co., Inc., Worcester, Mass.; Winslow Blanchard, president, Blanchard Machine Co., Cambridge, Mass.; Jerome R. George, vice president, Morgan Construction Co., Worcester; John W. Higgins, president and treasurer, Worcester Pressed Steel Co., Worcester; Ebbon S. S. Keith, president, Keith Car & Mfg. Co., Sagamore, Mass.; Theodore W. Little, vice president, Walworth Mfg. Co., Boston; Frederick H. Paine, president, Greenfield Tap & Die Corp., Greenfield, Mass.; Richard H. Rice, manager, General Electric Co., West Lynn, Mass.; E. Kent Swift, treasurer and general manager, Whitins Machine Co., Whitinsville, Mass.

Discuss Costkeeping Problems

Members of American Gear Manufacturers' Association Consider Standardization and Cost Accounting at Semiannual Meeting—Describes Machine Rate Method of Distributing Expense—Next Meeting Place Is Cincinnati

HELD at the picturesque Lake Mohonk in the Shawangunk mountains of New York state, the semiannual meeting of the American Gear Manufacturer's association, Oct. 20-22 was given an atmosphere of intimacy and informality that not only added to the value of the discussions, but went a long way in further cementing the friendly relations which existed among the members of the association.

The principal topics discussed at the open sessions of the convention pertained to cost methods and standardization. P. G. Agnew, secretary of the American Engineering Standards committee, opened the discussion on the latter subject by addressing the association on "Standardization from the Point of View of the American Engineering Standards Committee." This address was followed by the presentation of a paper along the same general theme by Calvin W. Rice, secretary of the American Society of Mechanical Engineers. Mr. Rice outlined the progress of the mechanical engineers in standardization work.

Virtually all of Thursday, the second day of the convention, was given over to reports of the various standardization committees of the association. While no action was taken at this meeting, it is likely that several reports will receive final approval at the spring convention, which, it was later announced, will be held at Cincinnati. The reports dealt with spur gears; bevels and spiral bevels; worms, gear worms and spirals; sprockets; composition gearing; herringbone gears; gears and pinions; keyways; and inspection standardization.

Methods of Distributing Expense

A feature of the convention was an address by Christopher Haigh, supervisor of costs of the General Electric Co., Schenectady, N. Y., on "Machine Rate Method of Distributing Expense." Mr. Haigh classified the methods now in general use under five headings: The man rate, the man hour, the sold hour, the material and labor, and machine hour rate plans.

The man rate method, he asserted, is in most general use because of its simplicity. For a plant making but one product this plan of distributing overhead is quite satisfactory, he stated. But where the product is varied and the tools are different for each of the various units produced, this method is misleading as to final results.

The man hour method has for its base the number of hours spent on a job instead of the amount of wages paid. This method, Mr. Haigh stated, is subject to the same criticism as the man rate method in that the assumption is made that the overhead expenses have a fixed ratio to the number of hours spent on a job. He asserted that the material and labor rate have the same inherent defects as the two foregoing methods, as it also is a matter of applying an average expense to jobs instead of an actual cost, the difference between this and the other two systems being only that the material is added to the labor before determining the expense to be applied. This method at best, Mr. Haigh asserted, can have but few correct applications. The sold hour plan, he declared, is in very little use and little can be said in its favor.

How Machine Hour Rate Is Used

In explaining the machine hour rate method, Mr. Haigh stated the plan consisted of distributing all of the manufacturing expenses by a charge to each job of the overhead cost of operating the machines and other facilities used on that job. This overhead charge is not an average charge for the whole plant or department but rather the cost of maintaining and operating each of the machines, group of machines, benches, etc. It is possible by this method to show the difference between the expense cost of a boring mill and a lathe, a gear cutter and splining machine, etc.

To install this method it is first necessary to find the number of feet available for direct productive work. The square feet thus obtained is then used as a divisor for determining the cost per square foot per year for maintenance, depreciation, taxes, insurance and kindred charges, but not including any expense incident to the actual operation of the machines. The next step is to divide the factory into production centers, including in each center machines of similar character, or individual machines where there were no convenient groups, and then determining the number of square feet occupied by each center, including the area required for materials waiting to go on the machines, workmen, etc. On the basis of the area occupied, a rental charge is fixed for each production center.

The cost of items incident to the operation and maintenance of each center is then determined. These expenses consist of depreciation of the machinery and equipment, taxes, repairs, small tools cutting oils and other charges which can be definitely allocated to one or more machines which have been included in one production center.

Says Machine Hour Rate Is Best

The rental charges and the charges for operating and maintaining the machines are then added, thus making a basis for determining the hourly cost of expense applicable to work on the machine hour method. To determine the hourly charge, the total normal hours which each production center will work per year must be estimated. The amount of expenses allocated to each production center is divided by the normal hours estimated, the result being the expense cost per hour. Items such as supervision, clerical and general administrative expenses are to be totaled and divided by the sum of the normal hours of all production centers. This results in another hourly expense cost which is to be added to each machine rate as a supplementary charge.

Mr. Haigh stated that in his experience he found the machine rate method the most accurate and generally satisfactory. He said he believed the principal reason it is not in more general use is because of the work involved in getting the system started, but that in any business which is to a large extent competitive, the installation of the method is well worth while.

Organize Sales Company

The Manufacturer's Sales Co., has been organized, with offices in the Leader-News building, Cleveland, to represent in Cleveland and surrounding territory one or possibly two large manufacturers for the sale of their respective products. C. C. Bradford, for a number of years sales manager of the U. S. Light & Heat Corp., and more recently sales manager of the Marlin Rockwell Corp., is manager of the new enterprise. Mr. Brdaford is widely acquainted among manufacturers and buyers throughout the Middle West and has had extensive experience in developing sales organizations.

Cleveland in Open Shop Ranks

American Plan Association Organized, with Fully 70 Per Cent of Industrial Employers Co-operating—Effort Begun To Extend Open Shop Principle to All Lines of Employment—Motor Car Manufacturer President

CLEVELAND employers have organized an association for the establishment of the American plan in employment relations. It is their purpose to make it one of the strongest and most effective associations of its kind in the country. Fully 70 per cent of the industrial employers in the city, giving employment to 85 per cent of the workmen, either have joined or have applied for membership. The association plans to extend the membership to include every employer in the city, and eventually to bring about the open shop rule in all lines of enterprise. F. C. Chandler, Chandler Motor Car Co., is president, and committees now are in process of formation. In a statement issued by the association it is said:

"The American Plan association has been formed to carry into business life the same principles that are existent in our national life.

"The constitution of the United States guarantees to every man equal opportunities and equal justice. The individual freedom of activity is also guaranteed, providing that the rights of others are not interfered with. The American plan in industry can best be typified in the open shop. There is, however, a confusion in the minds of a good many people when the open shop is mentioned, as their thought immediately is that the open shop is the counterpart of the closed shop. The true fact is, however, that in industry the open shop is contrasted to two 'closed shops.' There is the closed nonunion shop, where no man with a union card can get a job, and there is the closed union shop, where no one without a union card can get a job.

Permits Constitutional Rights

"The open shop, however, is the American plan in industry because it is the place where the constitutional rights of the individual are neither abridged nor denied. In an open shop freedom of action and freedom of expression are always guaranteed to the parties involved, both employer and employe, without the intervention of any disinterested person. The open shop established in any community bespeaks prosperity and activity and industrial peace in that town. If there is guaranteed freedom of action of the employe, that spirit in industry will attract men to the city where they know their individual skill and ability can express itself in production and their remuneration be commensurate with their efforts. Where you have activity and contented employes, prosperity is the result, and the worker as well as the invested capital receives adequate returns, and are therefore giving to the community their spirit of progress which forges it ahead of the town where unamerican principles are in existence.

"The American Plan association takes into consideration the three elements in the community, i.e., the employer, the employe and the general public. If we can make Cleveland 'open shop' in spirit and in fact more capital will be invested here and more good citizens will be attracted, and the general public will enjoy the benefit of the progressiveness which results by harmony in the industrial life of the community."

Report on Iron and Steel Labor in 1919

Washington, Nov. 2.—Common labor in the iron and steel industry earned, on an average, approximately $100 a month in 1919, according to the bureau of labor statistics of the department of labor. So far as the rate per hour is concerned, common labor was paid least in puddling mills, where it got 43.4 cents per hour. The highest rate per hour was paid in bessemer converter plants, where the rate was 48.9 cents. However, because of longer hours, common labor in blooming mills, paid at the rate of 46.9 cents per hour— proved the biggest wage earner in 1919, the average being $1463.82 for the year. Considering that the survey covered 131 plants in 10 divisions of the iron and steel industry, the spread in rate paid common labor in 1919 was not great, the lowest being 43.4 cents per hour and the highest 48.9 cents. As was the case with more skilled labor, it was found that the Pittsburgh district paid common labor best, with the Great Lakes and Middle West mills second, eastern ones third and southern ones fourth. In the accompanying table it is to be noted that the average hours worked are those per week day. For comparison with other industries, the total number of hours worked per week has been divided by six.

Average Hours Worked and Earnings of Laborers in Iron and Steel Industry in 1919

	Number of establishments	No. of employes	Average hours worked per week day	Average earnings per hour worked
Blast furnaces	23	2131	8.5	$0.455
Bessemer converters	10	638	7.6	.489
Open-hearth furnaces	19	1763	8.4	.464
Puddling mills	11	214	9.0	.434
Blooming mills	19	495	10.0	.469
Plate mills	9	584	7.2	.449
Standard rail mills	5	423	5.5	.478
Bar mills	25	1249	7.9	.442
Sheet mills	6	161	8.1	.460
Tin plate mills	4	352	8.3	.460

Open Shop Established in Alabama Coal Fields

The Alabama Co., one of the largest coal producing companies in Alabama, has severed virtually all connections with the United Mine Workers of America. The company has layed off all miners employed at its mines in Searle and Brockwood, where walkouts occurred last week, and is now hiring new men without any reference to the blue book contracts which were broken by the miners when they quit work. The men layed off have been notified to vacate the company's houses.

The backbone of the strike appears to have been broken so far as the union miners are concerned, and most of the large operators now steadfastly refuse to deal with the union.

Very little concern was evinced by the operators when announcement came from Indianapolis that John L. Lewis, international president of the mine workers, had sent a telegram to President Wilson urging that the department of justice be directed to enforce the principle of collective bargaining between the coal miners and the coal operators of Alabama.

The operators have refused to hold any conference with the striking miners looking toward settlement by means of arbitration, stating that the sole issue now was as to whether or

not they should recognize the union.

Rumors that general strikes may be declared throughout Alabama as an aid to the union miners, are not taken seriously.

Repudiate Radical Leaders, Warning to Workers

The textile workers of Philadelphia must perform their tasks in a capable manner and repudiate their radical union leaders, or approximately 125,000 will be out of work, according to J. L. Benton, managing director of the Philadelphia Textile Manufacturers association. Mr. Benton said that already 40,000 incompetent workers had been dropped.

"The manufacturers are in a position now to do this," said Mr. Benton. "During the war they were not."

Mr. Benton stated that the textile manufacturers are not opposed to unions but that they are opposed to radical leaders and are going to fight it out with the latter at this time. Other textile manufacturers have adopted the attitude outlined by Mr. Benton. Union leaders charge that the statements of Mr. Benton and the other manufacturers indicate a fight for the open shop.

Puddlers' Pay Is Raised 74 Cents Per Ton

Puddlers' wages were raised from $18.02 to $18.76 a ton for November and December at the bimonthly wage settlement made by representatives of the puddlers and the bar iron manufacturers in Youngstown, O., Oct. 29. Sales sheets of representatives of the middle western bar iron mills developed a card of 3.55c, as compared with 3.40c for the previous two months. The average of cards for 1920 is 3.07c. An advance of 7½ per cent was made effective in the wages of finishing mill men. Following is a comparative statement of bimonthly puddled iron prices since Jan. 1, 1917:

	1920	1919	1918	1917
Jan.-Feb.	2.55c	3.10c	3.10c	2.35c
March-April	2.70c	2.75c	3.30c	2.45c
May-June	3.00c	2.50c	3.35c	2.65c
July-Aug.	3.25c	2.50c	3.40c	2.75c
Sept.-Oct.	3.40c	2.50c	3.45c	2.85c
Nov.-Dec.	3.55c	2.50c	3.45c	2.95c
Yearly average	3.07c	2.64c	3.51c	2.65c

Paterson Pushes Campaign

The Associated Industries of Paterson has begun an educational campaign in behalf of the open shop in the New Jersey city. The campaign will be conducted through the newspapers, advertising space being purchased to set forth the principles of the American plan of employment. So far as the metal trades in Paterson are concerned the issue was decided last year and the open shop established firmly in those trades. The present effort is to extend the plan to all industries and enterprises. The association has promulgated a resolution, containing among other clauses, the following:

"The open shop principle is the bulwark of those American ideals of human freedom and democracy upon which our government is based; is the safeguard of national prosperity and welfare in the conduct of our industries; and is our sole protection against the encroachments of bolshevism and radicalism of every description."

Railway Bridge Builders Meet in Atlanta

About 500 delegates from all over the United States attended the thirtieth annual convention of the American Railway Bridge and Building association, held at the Piedmont hotel, Atlanta, Oct. 26, 27 and 28. The annual meeting of the Building and Building Supply Men's association was also held in Atlanta at the same time, 33 companies exhibiting their products in connection with the two conventions.

The program included mainly committee reports and discussions on subjects of importance in railroad construction work and a few addresses on strictly technical topics. The keynote of the bridge and building association convention was that the railroads of the nation must begin now to build for the future.

Officers were elected by both conventions for the ensuing year at Thursday's meetings, and New York was selected as the meeting place in 1921.

Companies which were represented at the supply show included the following: Raymond Concrete Pile Co.; Paul Dickinson, Inc.; Joseph E. Nelson & Sons; William Robertson & Co.; T. W. Snow Construction Co.; George P. Nichols & Bros.; High Grade Mfg. Co.; A. O. Norton, Inc.; Standard Asphalt & Refining Co.; Kaustine Co., Inc.; Kelly Derby Co.; The M. G. Co.; Virginia Bridge & Iron Co.; L. & I. J. White Co.; The Texas Co.; Detroit Graphite Co.; U. V. Wind Engine & Pump Co.; American Valve & Meter Co.; National Water Main Cleaning Co.; Lehon Co.; Volkhardt Co., Inc.; Duff Mfg. Co.; Barrett Co.; American Tar Products Co.; Fairbanks Morse & Co.; Chicago Bridge & Iron Works; Jos. Dixon Crucible Co.; Buda Co.; Carter Bloxonend Co.; Johns-Manville Co.; American Hoist & Derrick Co.; Sherwin-Williams Co., and Massey Concrete Products Corp.

By-Products Dull

Naphthalene is Exception in Buying Movement in Coal Tar Products

New York, Nov. 1.—Buying in most coal tar products remains dull. Virtually the only exception is naphthalene, which still remains in good demand. Trading in this product, however, is not as active as it was two or three weeks ago. Prices on naphthalene range from 16 to 20 cents, f.o.b. works.

In benzol, trading is now at the lowest point this year, but despite this situation, prices continue steady. Pure benzol is quoted at 35 to 40½ cents, f.o.b. works, and 90 per cent benzol 35 to 38½ cents. Toluol is also in good demand, with supplies plentiful. No change, however, has been made in prices, the market holding at 35 to 40½ cents, f.o.b. New York.

Buying in solvent naphtha, sellers assert, is holding up fairly well, and considering the fact that supplies still are scarce, these interests express themselves as being well satisfied. The market on solvent naphtha is holding at 30 to 35½ cents, f.o.b. works. The paint and varnish manufacturers are the principal buyers at this time.

The greatest weakness in the coal tar products market is felt in sulphate of ammonia and there has been for several weeks past virtually no inquiry, and as a result, the market is nominal. It is doubtful, though, if better than $3.50 to $3.75, f.o.b. works, could be obtained by the seller, the weakness in nitrate of soda combining with the inactivity in lowering the market. Money stringency among farmers has resulted in fertilizer manufacturers withholding from the market. These interests assert they are unable to dispose of supplies already contracted for.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.35 to .40½
Toluol	.35 to .40½
Solvent naphtha	.30 to .35½

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	nominal
Naphthalene, balls	nominal

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.50 to $3.75

Contract

Pure benzol	$0.35 to .40½
Toluol	.35 to .40½
Solvent naphtha	.30 to .35½

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	nominal
Naphthalene, balls	nominal

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Material Handling Equipment Is Important Factor in New Sheet Mill

Automatic Charging Machines for Sheet and Annealing Furnaces, Complete Crane Equipment, and Electric Tractor and Trailer System Conserve Manpower

BY E. L. SHANER

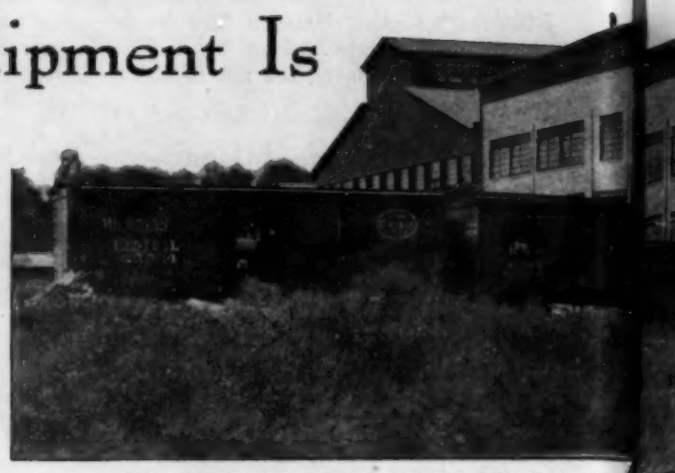


Fig. 2—Exterior view of the new sheet mill of the Newton Steel

IF ONE of the pioneer sheetmakers of America could look in upon one of the numerous modern sheet mills which have sprung up throughout the country during the past few years, no doubt he would declare that the most notable advance in sheetmaking since the beginning of the industry in this country has been in the handling of material. Very few changes have taken place in the methods of heating, rolling, annealing and finishing sheets. The machinery and equipment for performing these operations have been greatly improved, but the fundamental principles remain the same.

However, there has been almost a revolutionary development in the handling of the material. Whereas in the early days, most of the work was done by man power and in the most laborious manner conceivable, the modern tendency is to avoid manual labor wherever possible. Cranes, conveyors, automatic chargers and mechanical trucking apparatus are fast reducing the amount of hand work in steel mills.

The development of labor saving equipment has been carried to an unusual degree in the new plant of the Newton Steel Co., Newton Falls, O. The mill, which has been in operation since April, is equipped with a number of mechanical devices not usually found in plants of its kind. Ample crane facilities, automatic charging equipment for the annealing furnaces as well as for the sheet furnaces, and an efficient trucking system are features which contribute to the economical operation of the plant. The amount of hand labor is further reduced by the powdered coal system which serves every fuel consuming unit in the plant except the grease house. As the coal handling and conveying system is practically automatic, the fuel may be said to enter the plant and be consumed without have been touched by shovel.

The Newton Steel Co. was incorporated under the laws of the state of Ohio in August, 1919, with a capitalization of $3,000,000. A site was purchased at Newton Falls, O., about 20 miles west of Youngstown on the main line of the Baltimore & Ohio railroad. On April 1, 1920, eight mills were placed in operation and on July 1, two more, making a total of 10, were operated. The plant now is practically completed.

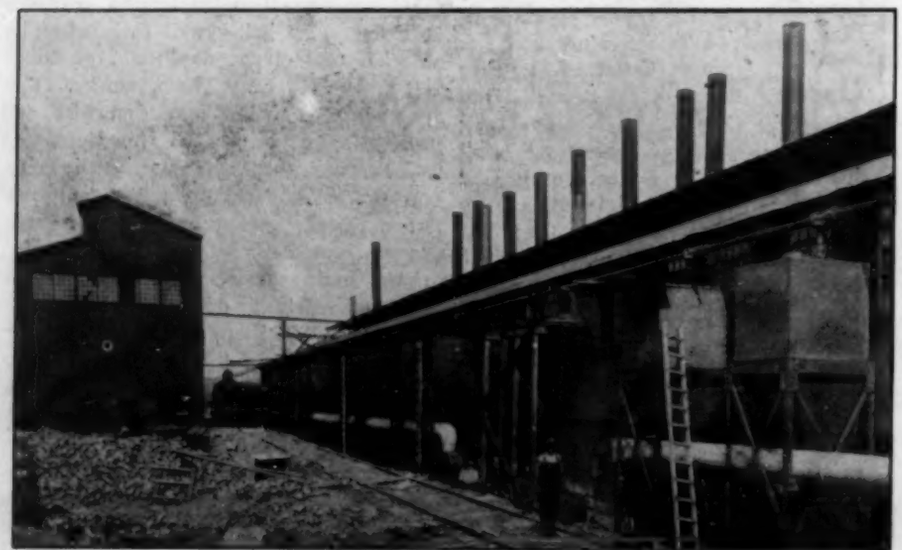


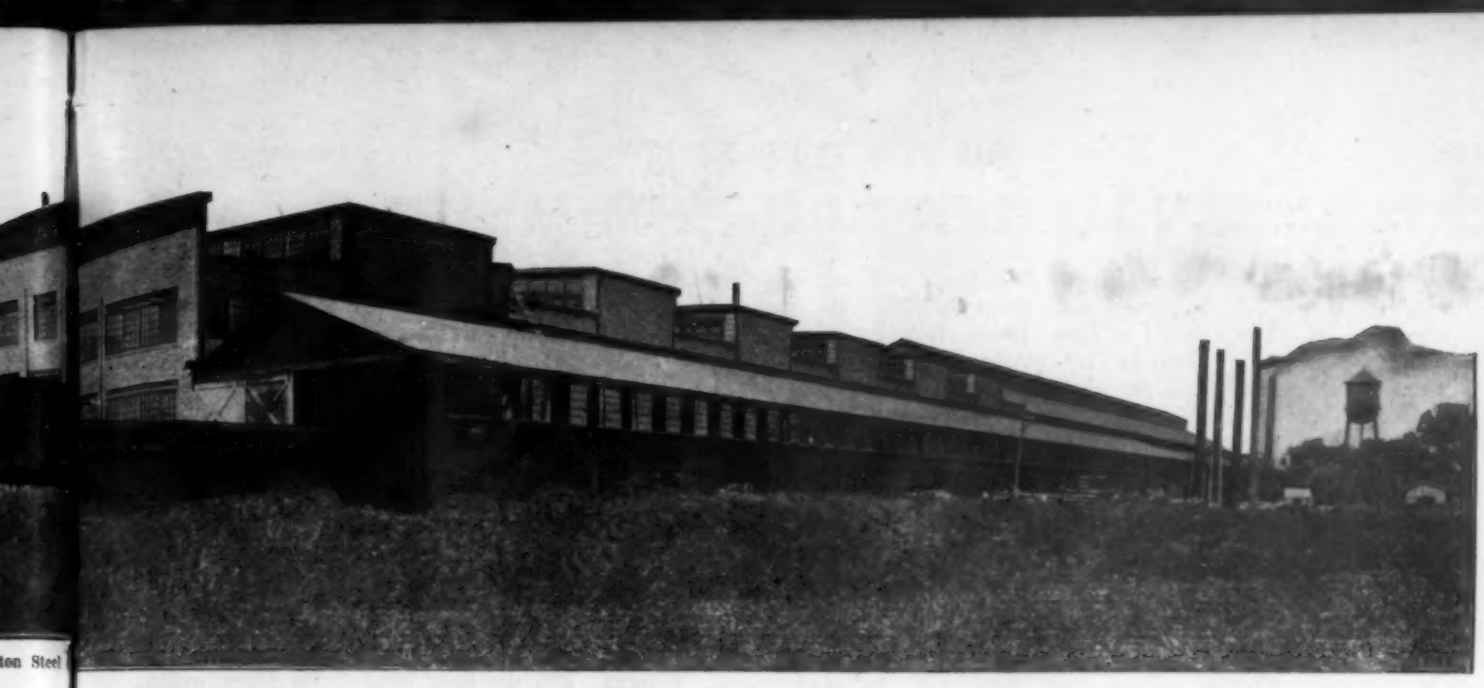
FIG. 1—A VIEW OF THE HOT MILL BUILDING FROM THE WEST SIDE OF THE PLANT. THE HOPPERS SHOWN, WHICH ARE NOW BEING INSTALLED, WILL SUPPLANT THOSE SHOWN IN FIG. 8

Description of Buildings

As indicated in Fig. 2, the plant comprises two large adjacent buildings, one housing the sheet furnaces, hot mills and stock room and the other the annealing and pickling departments and the warehouse. The shipping platform adjoins the warehouse. At the north of the main buildings is a large one-story building containing a store room and electrical, machine, blacksmith and carpenter shops. Three other buildings at this end of the plant are devoted to a coal pulverizing equipment, a boiler house and a transformer station for incoming electric current.

Sheet bars enter the plant in cars on a siding at the south end of the hot mill building, which serves as a stock room. The bars are unloaded by crane, there being three 10-ton electric traveling cranes built by the Alliance Machine Co., Alliance, O., in this bay. As the bars are needed for orders in the mill they are taken from cars or storage and sheared to length by one of two alligator shears, built by the United Engineering & Foundry Co., Pittsburgh. The sheared bars are placed in metal slings, which are easily handled by either of two 10-ton cranes which traverse the charging floor behind the sheet furnaces. The runway of the cranes extends into the stockroom, thus eliminating all hand labor in conveying the bars from the shears to the furnaces.

The furnace equipment consists of 20 units designed and built by the George J. Hagan Co., Pittsburgh. The furnaces are fired by powdered coal, as will be explained in more detail later, and they also are equipped with automatic charging apparatus.



ewton Falls, O., showing the cold roll building at the right with the hot mill building at the left. The stacks at the extreme right serve the annealing furnaces

Briefly, the charging equipment consists of a plunger which is moved to or from the furnaces by means of a screw driven by a small motor controlled by a push button. The plunger carries a series of V-shaped troughs each capable of holding from three to five sheared bars. When the troughs are filled, the charge may be placed in the furnace by simply pressing the button. The automatic control stops the motor when the charge has been placed in the furnace. The motor equipment was manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and the control apparatus by the Cutler-Hammer Mfg. Co., Milwaukee.

The hot mill equipment consists of ten 28 x 48-inch mills built by the Hyde Park Foundry & Machine Co., Hyde Park, Pa. The mills are arranged in a single row and are driven by a 2000-horsepower induction motor operating on 2200-volt, 60-cycle, 3-phase alternating current. The motor, manufactured by the Westinghouse company, transmits energy to the mills through a reduction gear set built by the Mesta Machine Co., Pittsburgh, the mill speed being 30 revolutions per minute. The motor and reduction gears are in a walled pit in the center of the hot mill bay.

The shearing equipment consists of seven guillotine-type shears built by the Hyde Park company and arranged along the eastern side of the hot mill building. This part of the building also houses two large roll turning lathes, one manufactured by the Mesta Machine Co., Pittsburgh, and the other by the United Engineering & Foundry Co., Pittsburgh.

Cold Rolls in Two Groups

The cold rolling equipment consists of 10 stands of 26 x 48-inch rolls arranged in two groups of five each. Each group is driven by a 250-horsepower induction motor operating on 2200-volt, 60-cycle, 3-phase alternating current. The motor, a Westinghouse product, drives through a gear reduction set manufactured by the Falk Co., Milwaukee. As in the case of the hot mills, the cold mills were built by the Hyde Park Foundry & Machine Co., Hyde Park, Pa.

In handling the sheets from either the hot or cold mills to the annealing department, considerable hand work is eliminated by the use of cranes equipped with specially designed slings or cradles. Fig. 8 shows a crane fixture designed to handle sheets as they are stacked by the catchers on leaving the cold rolls.

After the sheets are placed on the annealing box bottoms and the cover has been set in place by a crane, the entire box is lifted onto a novel annealing furnace charger, shown in Fig. 10. The furnace operator directs the charging machine by a central controller situated in front of the furnaces. Each of the two controllers starts a motor which drives a long shaft revolving in a pit extending half of the entire length of the annealing department. In other words, each controller handles the charge for nine of the 18 furnaces. Each of the two shafts carries 18 spur gears spaced so as to correspond to the position of the racks on the underside of the charging machine when it is placed on the tracks entering any one of the furnaces. Thus, when the shaft turns, the two gears meshing with the rack of the charging machine, propells the machine toward or away from the furnaces. When the machine is at its forward position, the annealing box is suspended over a stationary support in the furnace. At this stage, the furnace operator starts a motor at the rear of the charger which drives the table of the charger forward and allows it to drop down on cams, thus

FIG. 8—VIEW OF THE CHARGING SIDE OF A SHEET FURNACE SHOWING THE AUTOMATIC CHARGING DEVICE. THE TWO BINS SHOWN ABOVE THE FURNACE ARE BEING REPLACED BY TWO LARGER BINS SITUATED OUTSIDE THE BUILDING

permitting the annealing box to rest on the stationary supports in the furnace and freeing the table of the machine. It is then drawn out of the furnace by means of the gears and rack mechanism. The charger is now available for work at another furnace and is easily lifted from the track and placed where needed.

This machine saves considerable time in charging the annealing furnaces. The elapsed time, from the instant the box is placed on the charging table until the machine has deposited it in the furnace and has been placed on another track, again ready for business, is not more than two or three minutes.

The furnace equipment of the annealing department consists of 16 units which are now in operation and two additional furnaces in the course of construction. The furnaces burn powdered coal and were designed by members of the mechanical department of the Newton Steel Co. The furnaces are connected to five steel stacks which are shown in Fig. 2. The charging floor, together with the warehouse and pickling departments in the same building are served by three 10-ton traveling cranes built by the Alliance company.

The pickling department, situated north of the annealing furnaces, is equipped with two pickling machines built by the Mesta Machine Co., Pittsburgh. The machines are of the 4-arm type and are operated by steam. The acid tanks used in connection with the pickling machines were built by the Brown Lumber Co., Pittsburgh. The pickled sheets are dried in two drying machines built by the Newton Steel Co. to conventional designs. Fig. 4 shows a view of the pickling department. It will be noticed that the side and end walls of the building have been left open to reduce the accumulation of acid fumes around the pickling machines. Two additional pickling pits have just been installed in the south end of the stock room. This auxiliary equipment enables the company to pickle sheet bars and breakdowns which have not gone through all of the rolling and finishing operations, in accordance with specifications submitted by customers, without conveying them the entire length of the shop to the main pickling department.

As shown in Fig. 2, the warehouse and shipping platform occupy the south end of the cold mill building. This part of the plant is designed for the easy handling of sheets by crane or by trucking. Three 10-ton cranes, previously mentioned, serve this bay, and the floor is of wood block which facilitates the movement of trucks and trailers.

The finishing machinery in this department consists of a guillotine shear with a foot-operated holddown device made by George A. Ohl & Co. Newark, N. J.; a guillotine shear built by the Hyde Park company; and three straighteners built by Walker & Elliott, Inc., Wilmington, Del.; and a leveler which functions by stretching the sheets, made by the Globe Foundry & Machine Co, Niles, O. Sheets are brought to the finishing department on specially designed steel or wood cradles carried by crane. After the final straightening, trimming and inspection,

FIG. 4—A VIEW IN THE PICKLING DEPARTMENT SHOWING ONE OF THE FOUR-ARM PICKLING MACHINES. FIG. 5—A GENERAL VIEW IN THE FINISHING DEPARTMENT AND WAREHOUSE. THREE CRANES SERVE THIS DEPARTMENT

each pile of sheet is lifted onto four-wheel trucks, similar to that shown in Fig. 11. The truck is drawn to floor scales by an electric tractor built by the Lakewood Engineering Co., Cleveland. Here the tractor is uncoupled and moved clear of the scale floor, as shown in Fig. 11. The truck and its load are weighed and the tractor is again coupled to the truck, after which the sheets are taken to the shipping platform adjoining the warehouse. As shown in Fig. 6, access to this platform is through wide doors spaced conveniently throughout the length of the warehouse. Eight 30-foot cars are accommodated on the shipping track at one time. Additional weighing facilities in the finishing department are provided by two dial scales with raised platforms. These scales, together with the floor scale previously mentioned, were built by the Fairbanks Co., New York. The four-wheel trucks which convey the sheets to the railroad cars are manufactured by the Ohio Galvanizing Mfg. Co., Niles, Ohio.

One of the outstanding features of the Newton Steel Co.'s plant is the puverized coal installation, which extends to the sheet furnaces, annealing ovens and boilers. The coal arrives at the plant in drop-bottom cars on the track extending along the west side of the hot mill building. From the cars, the coal drops into a hopper and then to a crusher made by the Jeffrey Mfg. Co., Columbus, O. This machine reduces the coal to approximately the size of an egg, and in this condition it is lifted by an elevator to a dryer bin in the top of the mill building shown at the right in Fig. 1. The fuel then passes to a dryer, from where it is conveyed to mill bins, which supply the pulverizing mills. As the coal emerges from the pulverizing equipment, it is thrown against a screen of suitable mesh. The finer dust passes through and passes to a pump, which pumps it into a dust bin. The heavier particles of coal fall back from the screen and are further pulverized until the dust passes the mesh and into the pump.

In delivering the pulverized coal from the dust bin to the conveying system it is propelled in a horizontal chute by means of a motor driven screw. At the end of the screw the coal dust is picked up by a current of low-pressure air, which carries it through 3-inch delivery pipes to bins serving the various consuming units.

The coal is used in the 20 sheet furnaces, the 16 annealing furnaces, the two boilers, and in the dryer in the pulverizing plant. The delivery pipes for the sheet furnaces originally led to 20 bins supported on the roof trusses directly over the furnaces, as shown in Fig. 3. At the present time, however, larger bins are being installed outside the hot mill building to serve these furnaces. These bins, shown in Fig. 1, will provide a greater storage capacity than those installed within the building and will considerably simplify the piping and other apparatus on the charging side of the furnaces.

The 16 annealing furnaces are served by eight bins, one bin taking care of the requirements of two units. Each boiler is supplied by a single bin, while one bin serves the

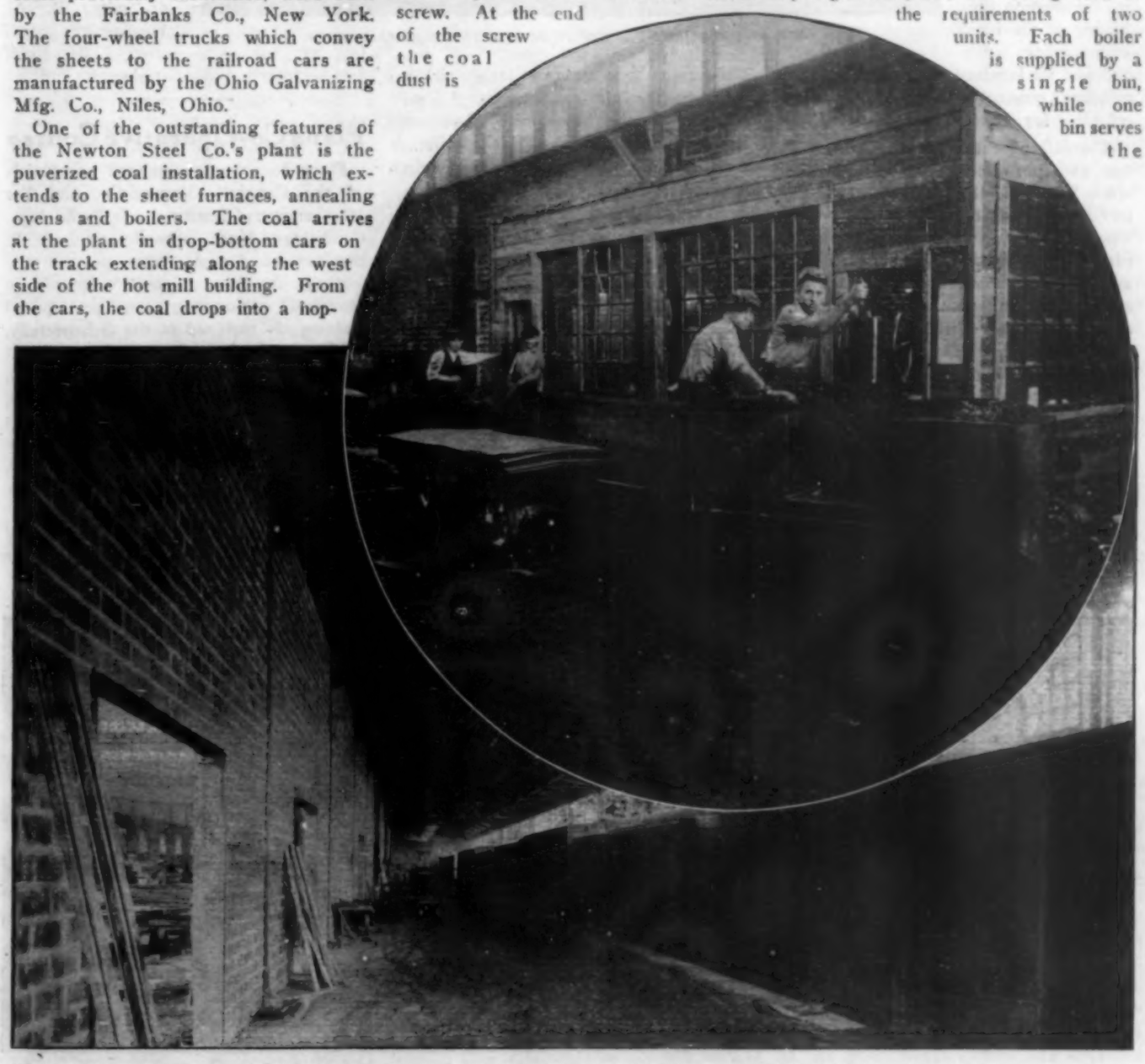


FIG. 6—THE SHIPPING PLATFORM JOINING THE WAREHOUSE IS SERVED BY A TRACK ACCOMMODATING EIGHT STANDARD BOX CARS. FIG. 7—FINISHED SHEETS ARE HANDLED ON FOUR WHEELED TRUCKS DRAWN BY ELECTRIC TRACTORS. IN THIS CASE THE TRACTOR IS CLEAR OF THE SCALES TO ALLOW THE SHEETS TO BE WEIGHED

drying apparatus in the pulverizing plant. Each bin is rectangular in shape and has a hopper bottom leading to a horizontal tube in which a screw driven by a 3-horsepower motor revolves. At the end of the screw the coal dust drops into a vertical section of pipe to which air is introduced at a pressure of about 3 pounds per square inch. This is sufficient to carry the dust to the burner at the furnace where the coal and air is mixed with additional air in sufficient quantity to produce a proper mixture for combustion.

FIG. 8—ONE OF THE TWO GROUPS OF FIVE STANDS OF COLD ROLLS

A small pipe enters each bin at the top and permits the operator to admit a jet of air to agitate the coal dust in case it tends to stick in the hopper. The distributing pipes throughout the plant are equipped with shut-off gates and convenient valves so that the coal can be distributed to any bin at the will of the operator. The pulverizing plant and system used was installed by the Fuller-Lehigh Co., Fullerton, Pa. The boiler house equipped for powdered fuel, contains two 250-horsepower boilers built by the Babcock & Wilcox Co., New York. These units generate steam for the pickling machine, the air compressors, a forge hammer in the blacksmith shop, and for heating purposes. Each boiler is capable of 400 horsepower when pressed.

At the present time scrap is being shipped as it is cut from the sheets, but a baling press made by the Logemann Bros. Co., Milwaukee, is being installed in the southwest corner of the hot mill building. When this is in operation, the scrap will be baled and then lifted direct to cars by a small crane made by the Pawling & Harnischfeger Co. and equipped by a magnet manufactured by the Cutler-Hammer Mfg. Co., Milwaukee. The Newton Steel Co. is devoting practically its entire production capacity to high grade automobile sheets. The officers are: President, Edward F. Clark; vice president and general manager, H. M. Steele; vice president and manager of sales, R. A. Kenworthy; treasurer, J. H. Fitch Jr.; secretary, John Stambaugh, 2nd.

Plans Co-Operative Course

Plans have been completed by officials of the General Electric Co. and the Massachusetts Institute of Technology, Cambridge, Mass., whereby students in the senior and post-gradute years at the institute in the co-operative course in electrical engineering can get special training on turbines in the Schenectady, N. Y. works of that company, on high-tension transformers in the Pittsfield, Mass., works, and upon electric railway equipment in the Erie, N. Y., works. The opportunities for practical experience have been extended.

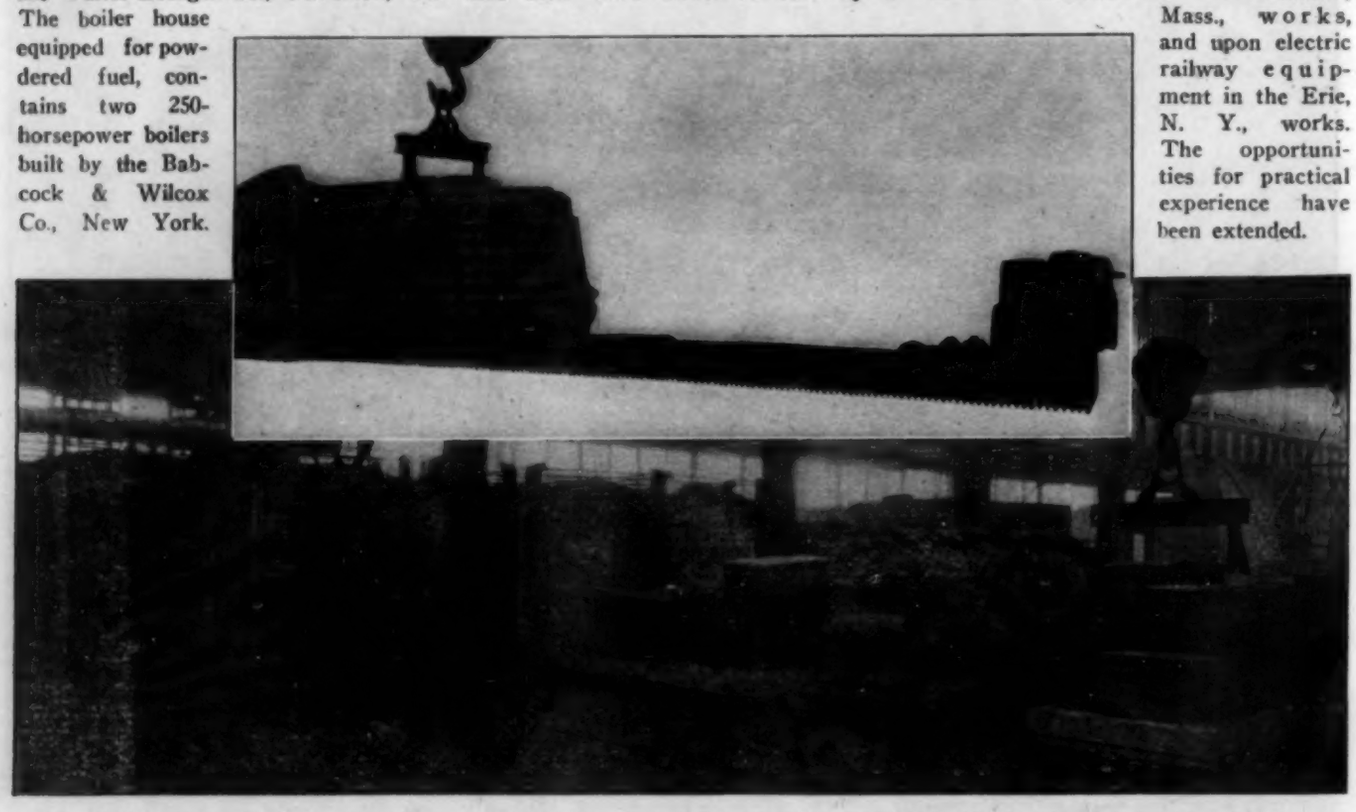


FIG. 9—A CORNER OF THE ANNEALING DEPARTMENT SHOWING AN ANNEALING BOX BOTTOM AND COVER. FIG. 10—(INSET) A NOVEL AUTOMATIC CHARGING MACHINE WHICH HANDLES ANNEALING BOXES TO AND FROM THE FURNACES

Italy's Soviet Shows Weakness

Collapse of Short-Lived Uprising of Workers in Steel Plants and Factories Due to Lack of Brain and Financial Support—Employes' Brief Control Illustrates Interdependence of Capital and Labor

BY FRANCIS MILTOUN
French Correspondent of The Iron Trade Review

IN THE lead of the timid soviestic movement which died in its infancy in Italy were the workers in the metallurgical industries. Italy is not Russia; its workers are not ignorant peasants or moujiks. Italian metal workers, aided by the most modern machinery and appliances, have put the names of Ansaldo and F. I. A. T., to mention but two important industrial elements, in the first rank of their kind throughout the world.

The complication of the Italian situation is more of a mystery than it would at first seem to be. If Italy will only hang on, and it looks as though it would, the country will be more nearly independent of outside aid than appears on the surface. Her economic difficulties are more those of adjustment and reorganization than anything else. Italy, bereft of coal within her borders, has potential resources in her ample hydroelectric power, a possible part of the coal mines of Heracles on the Black sea, besides very considerable deposits of lignite and peat. Besides, her iron ores of Elba and her high grade magnetic iron ores of Cogne in the Val d'Aoste grant her a certain amount of economic independence far greater than commonly supposed.

The Italian iron and steel industry ever has been largely dominated by powerful banking interests, the Banca Commerciali on one hand and the Banca di Sconto on the other. These to date have furnished the capital to fully three-quarters of the total metallurgical interests of the country. The self-appointed workmen's committees thought that by some magic it could do away with this machinery which revolves the wheels of trade and furnishes the funds to keep them turning. They were not so sure about the engineers, chemists and technicians of all ranks so they imprisoned as many as possible of them in the plants of which they took possession. The scheme did not work.

Without this first effort at sovietism in western Europe the world might never have come to a just realization as to what limits co-operation between capital and labor might attain. All the faults of the procedure were shown up in their true light, all its virtues exaggerated, but not without leaving at least a visible trail that an ideal was yet to be achieved which is not wholly within the grasp of either capital or labor alone. Above all did Italian labor come first to realize the futility of attempting to operate without the aid of men with capital and brains.

Scale Was Proof Enough

It is to the credit of the metallurgical industries of Italy that the try-out came with the F. I. A. T.s and the Ansaldos and the Ilvas, big, influential units, where the proof adduced might be deemed conclusive. The ignorant protest organized against intelligence failed miserably; not a molder or a ship riveter but felt his impotency once he was left groping alone. He kept his furnaces alight but he failed to draw the charges on a paying basis.

Some half finished small work was carried to completion in automobile factories, locomotive and rolling stock shops, agricultural machinery plants and shipyards, but the workers soon came to a deadlock. When they tried to negotiate for raw material from outside the question was asked as to who was to pay for it; and to unload finished product they again met the same check. Their first disappointment came in the latter case when they tried to sell agricultural machinery to the peasants in exchange for farm produce at the Milan bourse.

Then they came to realize that the role of the capitalist was something else they could not replace. Upon arriving at this point the scheme collapsed. Signor Giolitti, prime minister and himself a socialist, brought about the *modus viverdi* by which employers and workmen got together again. This was not without pangs of sorrow on one side and the other. But the point is that the stalemate was broken. Practically there the matter stands today.

Since Aug. 27, when a workman was fined by an overseer in a Milan machine shop and the workers physically maltreated the latter, until the date of the settlement, a month later, nothing arose to check an approach to a co-operative understanding save the unwillingness of one party or the other to listen to the arguments of its opponents. Only after Oct. 4 were the iron mines of Napoleon's prison isle of Elba taken over by a group of workers who demanded, for which there was doubtless some justification, that the state should give them a contract analagous to that granted to the workmen in privately owned and operated enterprises. There was no sabotage here and production continued under the supervision of technicians, who were invited to remain, which they did.

This is a brief resume of what happened to bring about the temporary "control," if such it can be called, of the workers. What actually brought about the outbreak, and what the final outcome will be, is even now vague, and has been based more on theoretical conditions which may or may not come to pass than on circumstances which would seem to have justified action.

Unquestionably it was a direct assault on capitalism and brains. France to date has been free of it. As Judge Gary said, on the eve of his departure from Europe: "France is more nearly a country of law and order than any other in Europe." The contrast between what happened in Italy and what might happen in France under a similar blow, is that the Italian peasants joined with the industrial workers. In France such a thing could not happen. The French peasant had his revolution a century and a quarter ago and finished with it. Eleven millions of this class on the farms want no more interior strife.

At the moment, something similar is brewing in the "iron district" of Spain, where 35,000 metal workers are out. And on a single day 600 shots were fired on the metal workers in Bilbao. This is doubtless more of an anarchistic, revolutionary demonstration of political purport rather than one based upon what the Italians wrongly believed was a purely economic measure.

The growth of the movement started from a letter written in August by the Italian labor syndicate to the Italian Industrial federation asking wage increases all along the line. How far apart from politics this was is indicated by the fact that there was no "sympathy" movement by the state railway, steamship or post office employes. Only the later demonstration by the miners in the government owned and operated

iron deposits of Elba gave slightest indication of a political complexion to the affair. The employers replied that under existing conditions a wage increase was impossible considering the momentary dependency of Italy for so much of its raw material upon foreign countries, where dollar and sterling exchange ruled interior and exterior economic conditions. The dollar at this time was well above 23 lire, as compared with the normal 5.20 lire. Intensive production, it was pointed out, was the only sure method of improving the permanent situation of the Italian worker. To achieve this Italian employers were willing to cooperate at some future time but for the present production would have to be the watchword, they declared. The government was helping this to the extent that on the single item of automobile imports alone the equivalent of the $2000 car was imposed with an import tax of nearly 8000 lire. Many other quasi-luxuries were forbidden of entry altogether and only highly finished metallurgical products were allowed to be exported.

The Italian workman in spite of the undeniable high cost of food and household needs was shown to be doing well, consuming 98 kilos or 216 pounds of meat per annum as compared with 84 kilos or 185 pounds in 1914, whereas wages of male workers in general had increased 297 per cent and those of women 360 per cent in the same period. As against this living costs had increased 264 per cent. Actually since November, 1919, wages had increased 30 per cent and living costs 26 per cent. The workers were demanding a more ample living, which perhaps they were entitled to, and which perhaps in part was due to the stories which drifted home of the financial and social status of their brothers in America who had emigrated long years ago. On the other hand, the bulk and value of the per capita output of the Italian workman was growing continually less.

The threat, or rather the fear, of a lockout in case of too insistent demands caused the workers to publish the fact that they would not submit to this and if it came to pass they would break down the doors and take possession. This they did. Three distinct committees were formed for each plant under the banner of the General Conferation of Labor, administration, technical and factory supervision.

In a Milan foundry, employing 2000 workers, the latter after lockout invaded the establishment threatening any who would continue work. Another group precipitated itself upon the offices and claimed pay for all the time they might be locked out pending adjustment of their claims. Banners were carried through the streets in many Lombard towns reading: "Death to the Managers." The Consortium of Metallurgists of Lombardy protested against such methods and sought the support of the government. In all this district 289 industrial establishments were surrounded and menaced, and many were actually sequestered by the workers.

At Turin most of the big metallurgical plants closed their doors and proclaimed a lockout. Metal workers without any great difficulty took possession of many of them, among these the model F. I. A. T. and Lancia automobile plants. At Genoa in the important Ansaldo plants, at Naples in the Vasto steel plant, at Bergamo and at Asti in Piedmont, the same incoherent violence was going on. It was at this stage that Signor Giolitti, at Milan, stated before the committee of employers and workmen jointly assembled that necessity for an immediate understanding could no longer be ignored. By any reasonable means the conflict must be brought to a conclusion. After a laborious discussion the premier proclaimed government control of the plants if an agreement was not arrived at immediately. This was a threat of a nationalization of industry. It was not a solution, but it brought about a solution in that the workmen agreed to vacate the premises which they had illegally occupied and to go back to the molding floor, the bench and the shipway pending a final adjustment of the question on which capital and labor had drawn apart for the first time in western Europe.

On Sept. 26, 127,904 workers voted for this solution as against 47,431 who were for holding out. A few extremists may still hold out for a time, but busy factories and full pay envelopes may be expected to work their potency before spring, when it is not without reason to suppose that the economic situation of Italy will be more satisfactory than at any time since that country lined up with the allies in the spring of 1915.

Airplanes Used To Deliver Crane Repair Parts

TO SAVE a loss of time from a shutdown occasioned by the breaking of a crane, a western crane manufacturer recently rushed repair parts a distance of 135 miles by airplane. This is perhaps one of the first instances of mechanical parts being transported by the air route. The Ferguson Coal Co., Chicago, while unloading several coal cars was forced to shutdown its crane due to the accidental breaking of one of the parts. Realizing the seriousness of delay, company officials immediately telephoned the crane builder, the Locomotive Crane Co. of America, Champaign, Ill., for repair parts. Securing the use of two airplanes from Rantoul, a government flying field close to Champaign, the Crane company loaded one with 250 pounds and the other with 275 pounds of repair parts. Two hours later the two planes landed at Checkerboard field, in Chicago where a truck from the coal company received the parts and rushed them to the coal yard.

Filling the suggestion box is the Cambria Steel Co., Johnstown, Pa., employe's aim. Prizes are awarded every month for the best ideas on product improvement, waste decreases, lessening costs, safety and better working conditions, etc. The plan has been in operation three years.

India's Steel Industry Expanding

Extension and Improvements to Blast Furnaces and Mills Will Guarantee Output of Pig Iron and Steel Greater Than Domestic Needs—Country May Soon Place Products in Markets of the World

BY CHARLES P. PERIN

PROPHESYING is a dangerous pastime but it seems fair to assume that India, within a measurably short time, will be able to take care of her own requirements of iron and steel and to export pig iron to almost any market in the world. With a production cost as is possible in India due to the relatively close proximity of the necessary elements and low rate of freight, pig iron can be produced at figures which defy competition.

India contains 1,820,657 square miles, or a little less than 60 per cent of the area of the United States. Within this area is contained a population of 315,000,000. The density of population to the square mile varies from an average of 175 over the whole area, to as high as 800 people per square mile in certain districts. Of this total population, 60.6 per cent are under British rule, and 39.4 per cent under native control.

Lord George Hamilton, former secretary of state for India, approached Jamsetji Nusservanji Tata, a distinguished parsee of Bombay, who had made a great success of cotton spinning, and begged him to take up the manufacture of iron and steel in India, and to restore to India the renown which it had 2000 years ago as a producer of iron and steel. As a result of this interview, Mr. Tata took up the subject actively, and in 1902 commissioned the writer as consulting engineer to study the iron deposits of the country.

Out of his investigations and those of C. M. Weld, New York, grew the establishment of the Tata Iron & Steel Co., which today employs 25,000 men and women in its modern plant for which improvements and extensions have been planned to give it 10 blast furnaces. This company will then have invested $70,000,000.

In the first studies of the geology of the country, forests of sufficient density were not found to warrant the establishment of a charcoal furnace in the central provinces in the region in which Mr. Tata held concessions. Investigations were, therefore extended toward the east in order to approach more nearly the Bengal coal fields, which were then developed to the point of producing a large tonnage. Studies of the iron ores at Chanda showed an ore largely magnetic, carrying 69 per cent of metallic iron 0.01 per cent phosphorus.

The next important work was carried on in the central provinces, south of the Bengal Nagpur railway, at a place called Dhullee-Rajara. Here Mr. Weld proved by diamond drilling the existence of one deposit containing 2,500,000 tons, and an adjoining deposit now assumed to contain 7,500,000 tons, making a total reserve in the Raipur district of 10,000,000 tons of iron ore carrying 67 to 68 per cent metallic iron and 0.06 to 0.09 per cent phosphorus. This particular iron bearing area is now known to have a very considerable extension to the south, carrying a tonnage variously estimated from 20 to 30 times that now reasonably accurately known.

The Tata company was formed in 1907 and after securing the lease of the iron ore at an average royalty over a period of 60 years of 2½ annas (5 cents) per ton, a site was found at Kalimati, now Tatanagar, for the blast furnace plant and steel works, on the line of the Bengal Nagpur railway, near Sini Junction and about 155 miles from Calcutta. The point selected was 100 miles approximately from the coal, 40 miles from the iron ore and 100 miles from deposits of dolomite.

In 1875 the Barakar Iron Works was started near the Jherria coal fields, 143 miles northwest of Calcutta. Its first efforts resulted in failure. The works were restarted in 1881 and after a rather checkered career were finally reorganized into the Bengal Iron & Steel Co., in 1889. This company now operates four blast furnaces with a possible output of 80 tons per day each. In 1904 the Bengal Iron & Steel Co., closed down its steel plant which consisted of two small basic open-hearth furnaces and a blooming and structural mill. This plant failed and has not been operated since 1905.

The Tata Iron & Steel Co. started construction in 1907 and commenced operations about five years later. Kennedy-Sahlin & Co., were constructing engineers and built the first two blast furnaces, four 40-ton basic open hearths, a combination rail and structural mill, and bar mill having 10 and 16-inch trains. Since the successful operation of the Tata Steel Works, other enterprises have been formed and there is now under construction by the Indian Iron & Steel Co. two modern blast furnaces. This corporation has secured its iron ores in the Singbum district, just south of the deposits of the Bengal Iron & Steel Co. Various estimates have been made of the tonnage possessed by this company but one single deposit according to their report contains over 150,000,000 tons of 65 per cent ore above drainage level.

Two other iron and steel projects are in the formative stage, one in the hands of Villiers & Co., in which some of the English ironmasters are taking a substantial interest. This company proposes to build two blast furnaces not far from Calcutta in the region of newly discovered coal and iron ore.

At the time of the starting of the Tata works, investigations of the imports into India showed a total tonnage of steel products of about 600,000 tons distributed over a wide variety of products. It was decided first to supply only a portion of India's requirements of rails, structural shapes and bars. India's requirements of steel have so increased that the imports have grown 100 per cent in 15 years, despite the local manufacture of steel and pig iron. Rail specifications of the government of India are extremely severe but these difficulties were overcome finally after the technical operations of the plant were brought into line with the requirements of the government.

In the early stages of operation, the staff was composed of a few Americans in the blast furnace department, Englishmen in the rolling mills, and Germans in the open-hearth department. Adventurous spirits willing to go out into the jungle to start a new plant are not always those of best technical ability and the process of elimination went on rapidly, but it was not, however, until the last of 1913 that the operations of making steel and rolling it might be termed successful. Since that date, the pressure upon the directors for increased output has been great and the plant as now designed ultimately will reach an output of 1,000,000 tons of finished product annually.

To review the raw material situation, India has enormous deposits of iron

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From a paper presented at the eighteenth general meeting of the American Iron and Steel Institute, New York, Oct. 22. The author, Charles P. Perin, is a consulting engineer, Perin & Marshall, New York.

ore, reaching staggering tonnages; large deposits of coal, where the seams occur in great thickness, with excellent roof and floor, and no serious mining difficulties so far except that large quantities of water must be handled during the rainy season. The deposits of limestone are not within easy distance of the ore deposits, but deposits of dolomite are known to be sufficient for present requirements. The deposits of limestone in Assam carry unlimited tonnage, as there are frequent breasts 4000 feet high. There is ample manganese for the requirements of a large steel industry. Magnesite occurrences are not large and have the disadvantages of being too pure to frit. Burma contains the world's principal deposits of wolframite so that for the manufacture of alloy steel, this valuable element is near at hand.

Coking Coal Limited

After investigations by some 20 prospectors, engineers of experience, and geologists connected with the different companies which have made these investigations, there is now estimated to be about 20,000,000,000 tons of high grade ore within a maximum distance of the fuel of 500 miles, and an average distance of 120 to 130 miles. During the war, the Tata company added to its reserves of ore a very large tonnage, anticipating a great ultimate increase in the tonnage of pig iron to be produced. One would naturally ask whether there was a sufficiency of fuel to smelt the enormous tonnage spoken of above.

A recent report of the coalfields committee appointed by the government of India in January, 1920, to study the question of waste of coal, states:

"Attempts have been made from time to time to estimate the available resources of higher grade coking coal in the Indian coalfields, but the information available is still too scanty to yield more than very rough figures. It has been calculated that the Ranigunj coalfield alone contains over 20,000,000,000 tons of coal of all kinds; most of this, however, is inferior, and only 518,000,000 tons have been estimated to be of better, or socalled first class, quality. The addition of the Jherria reserves of higher grade coal would bring the estimates for the two fields up to nearly 1,000,000,000 tons, but this figure may need modification in view of the large quantities of coal now known to have been destroyed in both fields by intrusive igneous rocks. Further to the west, the Bokaro field is said to contain over 600,000,000 tons of coking coal, and it is possible that further reserves will be found in the Karanpura field. Apart from these, the only other coking coal known to occur in any quantity in India is that of Assam, the high sulphur content of which, however, renders it unfit for metallurgical purposes. So far as we know, therefore, India will be dependent for her supplies of metallurgical coke on the group of fields lying in the Damudar valley, including Raniganj and Jherria; and although the total amount of coal that they contain is undoubtedly very large, the quantity available for coke manufacture is strictly limited. We are not justified at present in placing this at more than 2,000,000,000 tons, and when it is realized that the Indian iron and steel industry may depend on these reserves for its future existence, the necessity for their conservation becomes evident.

"Certain districts of Bihar and Orissa have recently been found to contain deposits of iron ore, which further investigation may prove to be among the largest and richest known, and to amount to thousands of millions of tons. To treat these, corresponding amounts of blast furnace coke will be required, and if that is available, it is possible that at some future date India may rank among the great iron and steel producing countries of the world. If, on the other hand, the present opportunist policy is persisted in and her resources of coking coal are squandered, the mainstay of this potential industry will be gone, and she will be left with the iron ore, but with no means of smelting it. India's annual output of coal has risen from about 5,000,000 tons 20 years ago to over 20,000,000 today, and if the present rate of increase continues, the output will be over 50,000,000 tons 15 years hence; this again would mean, even if no further increase took place, the extraction of 2,000,000,000 tons in 40 years. Unless her resources are strictly conserved and the use of coal of lower grade substituted, wherever possible, for that of the better coking qualities, India may be faced at no very distant date with the loss of her metallurgical industries for want of coke."

The coal production in the year 1918 was, in round figures, 19,850,000 tons, of which 10 per cent was consumed on the collieries. The railway consumption of the coal produced has varied since 1907 from 28 per cent to 33.6 per cent. Bunker coal taken at the ports amounted to 16.7 per cent; the jute, cotton and steel industries each consumed a little more than 5 per cent, the balance going to the public. There are employed in labor at the mines, about 135,000 men and women, whose average daily wage is 7.6 annas or roughly 15.2 cents per day. Since these figures were secured wages have advanced from 20 to 40 per cent so that it would be safe to say that the average day's wage is in the neighborhood of 20 cents.

Before beginning operations the Tata company opened negotiations with the railway board of India, which controls the matter of freight rates and the following concessional rates were secured. A rate of 1/15 pie per maund per mile, or translated into dollars, 3 mills per ton mile, was granted on all inbound raw material and on finished outbound products when shipped from the port of Calcutta. For local industries in Calcutta a special rate of 1/10 pie per maund was made. Putting the matter concisely, an assembly charge of practically 33 cents per 100 miles upon the coal and the dolomite is paid and a charge of 16 cents per ton upon ore coming from the original deposit of Gurumahisani.

India contains four regions in which there are important deposits of manganese ore of high grade and several regions in which are found large deposits of low grade manganese ore. In the native state of Gangpur, about 120 miles west of the Tata works, are several large deposits of manganese ore running 50 per cent and over of manganese. Within the port of Calcutta. For local indus- 30 miles of the works are a number of deposits running from 20 to 30 per cent manganese. In the center of India, not far from Nagpur are the large deposits of manganese from which the bulk of the 500,000 to 800,000 tons per year is exported. Other deposits occur along the Eastern Ghats, between Madras and Calcutta, and again in Mysere state near Shimoga.

Has Good Manganese Ore

The Tata Iron & Steel Co. has purchased a great area of coking coal and has developed large collieries capable of supplying its requirements when finally equipped with machinery and developed. The company also owns large manganese properties and has advantageous contracts for the supply of manganese over a term of years, so that it can manufacture not only ferromanganese for its own requirements, but can extend its operations to the manufacture of manganese steel castings.

In a country with such a dense population as exists in India, there need be no shortage of labor. At present employed at the Tata plant, including the construction force, are about 25,000 men and women. The Bengal Iron & Steel Co. employs about 10,000 while the Indian Iron & Steel Co., is still in the construction period.

India offers exceptional opportunity for the courageous manufacturer of iron and steel. The relatively close juxtaposition of the necessary elements insures a low cost of production if good management can be obtained. In the relatively short life of the Tata company there has been a steady increase in the number of Indians employed replacing Europeans and in the increased efficiency of those in higher positions.

Regarding the new plant and additions to the old plant of the Tata Iron & Steel Co., about 18 months ago, word was cabled to the effect that the plans should not interfere with the growth of the plant ultimately to 10 blast furnaces with the necessary steel plant. The plans which are being carried out for the present development, contemplate a total tonnage of 700,000 tons of pig iron and 580,000 tons of steel ingots converted into 425,700 tons of various finished product.

Making Basic Open-Hearth Steel-II

Working High-Sulphur Pig Iron by the Use of Heavy Lime Burdens Results in an Excessive Slag Volume—Importance of Manganese in Controlling the Fluidity and Basicity of the Slag—Pouring Temperature Discussed

BY F. L. TOY

BY FAR the largest part of basic open-hearth steel is produced in the stationary furnace and the large part of this tonnage is made by a combination of the pig and scrap and monell processes, the charge ranging from 53 to 60 per cent pig iron, for the most part molten. Limestone, ore and scrap are charged in order and after two or three hours, when the molten metal is added, a reaction starts and continues with oxidation of silicon, manganese, phosphorus, iron and to a small extent the carbon. A slag high in iron oxide and silica and low in lime and magnesia forms and contains a large part of the manganese and phosphorus, which is allowed to drain for the most part from the furnace.

As the charge melts the lime forms the usual tapping slag. Such a procedure although causing a loss of iron and manganese in the run-off, makes for faster working on high pig charges and allows for satisfactory tapping slags on lower lime burdens, saving finally the extra iron as oxide that a more bulky slag would carry. As conditions warrant the lowering of the pig below 50 per cent, then the decreasing ore charge as scrap charge is raised, and the lower initial content of silicon, manganese, etc., automatically tends to make the operation a pig and scrap process.

In two cases only is the duplex used because that process suits conditions metallurgically better than does the pig and scrap process, and produces a product economically that otherwise would be more difficult. The first case is due to high-chromium pig irons, which condition can be better met by first bessemerizing and then working through the basic open-hearth furnace. The second case applies to plants in the South, where with pig irons running 0.80 to 1 per cent phosphorus it is extremely desirable to desiliconize and decarburize in an acid bessemer converter, and on the transfer to a basic open-hearth furnace of the rolling type with the careful exclusion of the converter slag, to refine under a slag formed from a nucleus of lime and iron oxide so as to reduce the phosphorus in the steel and to form a slag containing 18 per cent or more of phosphoric acid. The latter can be skimmed off for final preparation as fertilizer and a new slag made, finally reducing the phosphorus content of the steel below 0.04 per cent, and allowing the metal to be tapped and finished in the ladle by necessary additions; or, the metal, with phosphorus reduced to 0.07 per cent and phosphorus in the slag well above the minimum required in the use as fertilizer may be transferred to another furnace and finished.

Duplexing Increases Output

The uses of the duplex process other than the two cases cited are primarily for rapid production under conditions where pig iron is relatively easy to obtain and a balancing of scrap supply is necessary as previously mentioned. Tilting furnaces, for the 100 per cent blown metal charge, are preferable because of the ease in getting rid of the excess slag at time of reaction. The charge other than that of starting up may be two-thirds to three-fourths blown under 0.10 per cent carbon followed by a high-carbon ladle called the "kicker." This is the more common practice. Better practice is the use of molten pig iron as the "kicker" because of the large amount of manganese introduced. The general absence of manganese in the bath places the duplex process at a disadvantage. Balanced against its frequency of tapping, heats ranging from 1½ to 4 hours between taps is the additional loss in conversion of 3 to 4 per cent.

Definite results in making high-quality steels can be attained a little more often in the acid furnace than in the basic furnace because acid furnace slags adjust themselves more readily and attain more nearly equilibrium, thus restraining the unbalanced activities of iron oxide with respect to the bath. The stationary basic open-hearth furnace on its usual pig and scrap program provides a considerable margin in this respect over the duplex process, and allows for greater control than is possible with the violent reactions due to the "kicker" and the difficulty in limiting the swift, powerful reactions so necessary for speed. The lack of manganese in the bath under these circumstances is a more serious disadvantage, coupled with the necessary practice of large additions in the ladle. If good steel is to be made by the duplex process it is necessary to have a sufficient amount of manganese in the bath as well as in the slag.

To provide a flexible system of output, and to retain the advantages of rapid decarburization and desiliconization of the bessemer converter and of balancing up of pig and scrap supply, the use of blown metal in a stationary furnace with both scrap and molten pig iron offers great inducements and in the long run finds a broader application than the straight duplex. Considerable increase in tonnage over the ordinary ore, scrap and hot metal charge is possible, and a residual manganese of fair amount will be present. The product will be practically equal to that of the usual stationary furnace process in quality.

Little can be said about the compositions of pig iron desirable without going extensively into the practice and requirements of many plants. Average basic requirements call for a silicon averaging 1 per cent, phosphorus has as yet not been troublesome, sulphur should be preferable under 0.040 per cent since the open-hearth process can do so little to reduce its contents in the charge except by wasteful expenditure of time and wasteful use of manganese. The manganese content varies widely by reason of certain desired benefits in the process. For duplex plants, iron of bessemer quality except as to phosphorus is of course necessary, with silicon content ample to insure warm bessemer blows and manganese not so high as to permit "slobbing." The sulphur content as in case of the basic iron must be regulated to the specifications of the trade.

High manganese pig iron has found extensive use in making high-quality steel in the basic open-hearth furnace. The general methods of procedure are, to make practically all the basic iron high in manganese, say 1.50 to 2 per cent, or to concentrate all attention in

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Abstract of a paper presented at the Oct. 22 meeting of the American Iron and Steel Institute, New York. The author, F. L. Toy, is superintendent of open hearths, Homestead works, Carnegie Steel Co., Munhall, Pa. Part I was presented on page 1109 of the Oct. 28 issue of THE IRON TRADE REVIEW.

this respect on certain of the highest quality products with a pig iron from one or two blast furnaces running up over 2 per cent, using a low-manganese basic iron, say 0.90 to 1.10 per cent for the balance of the product. The general difficulty in the case of spreading the high-manganese iron over all the product is the large manganese loss in the run-off from the average trade heat with high pig percentage. Undoubtedly the greater return is ultimately in concentrating the high-manganese iron in the higher quality heats where the usually lower pig charge makes for a higher residual manganese and higher manganese content of tapping slag, because of a small or no run-off slag.

No element functions perhaps as well in both steel and slag as does manganese. In the first place it confers fluidity on the slag as well as basicity. It tends to prevent the absorption of sulphur by the iron in all stages of the heat and to break FeS when formed. It acts in the latter stages of the heat to deoxidize the bath and to lessen the total amount of nonmetallic inclusions. Careful study of conditions arising in finished steel for varying manganese content of pig iron used, made at the South works of the Illinois Steel Co., has shown its effect in helping to control the influence of high-sulphur fuels and its general effect in giving a lower sulphur content in the steel together with a better quality.

The value for sulphur content in the steel and for rejection at the rolling mills over a stretch of 4336 heats show increasing sulphur content in the steel, and increasing rejections on the product of the rolling mills as the manganese content of the pig iron is reduced. For iron of 1.90 per cent manganese a sulphur content of 0.034 per cent is shown and a figure for rejections of 7 per cent, and an increase in sulphur content to 0.04 per cent and a figure for rejections of 10.50 per cent for iron of 1.15 per cent manganese. Manganese in pig iron, through its subsequent presence in slag and steel, is admittedly an aid toward the correction of bad influences and tendencies in steelmaking and certainly allows a little more leeway in use of high sulphur and poorly refined, nonuniform pig irons. Some claim that it helps toward more regular working in the blast furnace.

Avoiding Manganese Loss

We must allow for all the cases where manganese tends to round out processes and add the necessary refining action for good product, for all the benefit derived in the manufacture of fine steels, but we must certainly count the cost when manganese is used in an attempt to correct the evils of bad ironmaking and bad steelmaking. We must admit first that all the effective manganese added in the pig iron is not available in slag and steel because of losses in the run-off slag of the average heat, unless we slow down the production by retaining all products of oxidation of silicon, manganese, phosphorus and iron in the furnace, charging a larger amount of lime, and in the long run ending with a slag too large and unwieldy, which restrains rather than helps the effect of both carbon and manganese.

Use is Expensive

The attempt to work pig iron high in sulphur into the charge by use of heavy lime burdens is one that is extremely wasteful of time and material as against the results obtained. The large amount of lime makes for excessive volume of slag and for poor transfer of heat to the steel. This condition is further complicated by the viscosity of the slag which tends to hold larger amounts of iron oxide in its attempts to attain fluidity at the proper temperature for steelmaking. Manganese in the pig iron is here an aid through its oxide in promoting fluidity but its use is comparatively expensive as against the net results obtained. Sulphur is so much more readily and cheaply eliminated under the reducing conditions of the blast furnace that the attempt in the basic open-hearth furnaces occasions a net loss.

High sulphur content in the pig iron often is an indication of bad conditions in the blast furnaces, attempts at a reduction of the basicity of the blast furnace slag, of variations of temperature in controlling the silicon content, and we have rather fallen into the habit of attributing the sluggish pig iron and the bad results obtained in working the subsequent products of the open-hearth furnace to the sulphur content of both pig iron and finished steel. Thoroughly reduced, "rich" pig irons are absolutely necessary to good steel quality.

High-quality forging steel has been made at the Homestead works by use of both high and medium-manganese content of the charge. No high-manganese iron being available, the manganese was charged in form of spiegel both with the pig iron and in subsequent additions to the bath during the working of the heat, the total amount added being equivalent to 5 per cent manganese in the iron charged and 2.20 per cent in the total charge. The resulting slag averaged 12.8 per cent FeO, 14.5 per cent SiO_2 and 18.85 per cent MnO. The residual manganese at tap was 0.41 per cent. In the regular practice in making this steel the manganese content of the pig was 1.25 per cent and the content of the total charge 0.96 per cent. Two additions of 60 per cent ferromanganese were made during the last hour of working the heat, totaling 0.53 per cent manganese as referred to the total charge. The resulting slags averaged 15.85 per cent FeO, 10.10 per cent SiO_2, and 10.97 per cent MnO. and the residual manganese was 0.24 per cent. The second or regular procedure worked equally as well as that using high-manganese content in the charge.

This will introduce the question of the relative merits of the procedure where manganese is present in pig iron and the charge during melting and working, and that where lower residual manganese exists during the working of the heat but with manganese added in concentrated form as spiegel or ferromanganese in the last stages of the working. The latter procedure serves to obtain excellent results in the deoxidation of steel and the elimination of inclusions and is more economical in manganese. Both methods give excellent results in making high-quality steels and like many other questions in steelmaking, many careful comparisons must be made before we can generalize by saying that one or the other is better.

The slag, notwithstanding the fact that it is the medium, during the major portion of the heat, through which heat is transmitted to the bath of metal for the completion of the oxidation, and for the larger part of the refining action, has had comparatively little study in its relation to "every day" production. We cannot arrive at "worth while" conclusions in this study so long as we compare slag analyses as revealed only through the percentage of the various oxides present. There is an absolute necessity for the comparison of the weights of the elements as oxidized and going into the slag, which means a knowledge of the usual relation of slag weight to charge and of the relations by weight of tapping slag to run-off slag when the latter enters into the process.

Frequent Analysis of Slag Recommended

The determination of slag weights and the relative weights of the elements oxidized and going into the slag need not be made nearly so often as the slags are sampled and analyzed. The last mentioned work should be done frequently and the analysis by weights applied at intervals for check. Only by such painstaking methods can we arrive at the best slag volumes necessary for the best relations of

quality and production, and from this we get the necessary lime burden to give the necessary basicity relative to the acids present, plus an excess up to the point where the slag is sufficiently fluid and also neutral to the hearth and greater lime additions interfere, through promotion of viscosity, with the heat transfer through slag to steel and the proper functioning of the slag. Viscosity further introduces the factor of increasing slag volumes, since the slag in adjusting itself to a condition of fluidity necessary at its temperature, takes up iron as iron oxide from the bath or retains iron oxide from oxidizing additions made to the bath, thus increasing the losses, while at the same time introducing again the factor of increasing difficulty in transfer from flame to steel through the greater slag depth.

A careful checking of the amount of heat necessary to raise the slag to and maintain it at the tapping temperature, and comparison with the amount of heat necessary in the steel for the same purpose, will reveal the fact that considerable heat used in excess slag volumes could be made available for the production of steel. We therefore have the following factors as affecting slag weights and which can reduce the amount of heat necessary to raise slag to the taping temperature and keep it sufficiently fluid.

1—The quality of materials charged and particularly the pig iron. The good charges necessary in high-quality production therefore give incidentally a better slag volume for good working.

2—Careful consideration of the weight of lime charged.

3—Early removal of a portion of the slag in those cases where high percentage of iron in the charge together with the quality of the iron, make for large amounts of the products of oxidation which dilute the lime additions and raise the slag volume.

Manganese must here again be mentioned for its effect through its oxide in the slag in promoting fluidity while at the same time increasing the basicity, for its effect in reducing the iron oxide content of the slag, its tendency as a desulphurizer, and final effect in aiding in the removal of nonmetallic inclusions.

Pouring temperatures have received a great deal of discussion during the last three years because of the necessity of making large tonnages of ordnance material and important uses where lightness was desired with strength. Many definite opinions were expressed as to the part the temperatures of steel have in the production of flakes, woody structure and oxide inclusions, and were in some cases applied in an attempt to generalize statements as to pouring temperature in their application to various steelmaking methods in many plants, without having real quantitative data as to temperature.

Observations Relative

Long continued observation of pouring temperatures on certain classes of steel of fairly definite composition and with ingot volume fairly constant, lead one to the belief that observations, even with the best methods, are relative and must be applied only to the work in hand. An indication of the fluidity of the steel as observed from the formation of skull in the ladle is probably at present the best indication of the temperature of the steel at pouring. Steel poured at a temperature, which makes for a condition slightly above the skulling point, has been found good practice in making alloy steels. For general conditions of steelmaking, the evidence of small skull shows best temperature at pouring.

Much can be said of the methods used at the end of the process in making alloy additions, of the desirability of eliminating as much as possible the "killing" of the steel in the molds and of the merits of bottom pouring as against top pouring. Nickel additions can be made in the initial charge with but slight losses. Chromium, due to its high oxidation losses is best added as an alloy of iron and chromium in the bath before tapping with sufficient time, a maximum of 35 minutes is usual, to thoroughly melt the alloy and give the bath a uniform content of chromium. The loss of chromium by this addition ranges from 20 to 30 per cent, depending on the carbon content of the bath. Manganese additions on high-quality steels are best made in the bath before tapping.

The loss of manganese in the bath usually is twice that in the ladle. The use of crushed ferromanganese through a chute promotes efficiency and also uniformity of content in the steel in the case of ladle additions. Molten spiegel additions in the ladle have been used largely in making manganese additions on high-carbon heats such as rails and the carbon content of the addition naturally restricts the use to such high-carbon heats.

Ferrosilicon must be made in the ladle because of great losses resulting from oxidation of bath additions and the danger of rephosphorization of the steel. Introduction of finely ground ferrosilicon through a chute into the tapping spout of the furnace as the steel is running out gives good results in obtaining uniformity of silicon content and reduces the loss of silicon as low as 20 per cent. In this, the addition of silicon to the steel, the acid furnace has many advantages.

There is a growing tendency toward the elimination of methods of deoxidation as applied in the ingot mold by powerful deoxidizers such as ferrosilicon and aluminum. Exceptions are made in the case of shell steels and other high-carbon steels where even slight porosity is objectionable. It is in general, thought better at the present time, to take "preventative" measures during the making of the heat, rather than attempt to "cure" by rapid and powerful deoxidation at the last stage, the pouring of the ingot.

Small amounts of deoxidizers may be used to advantage at times in preventing sponginess in the solidified ingot. When amounts which cause such rapid solidification of the top of the ingot are added the gases have but little chance to be liberated from the ingot, and tend toward the formation of pipes and gas pockets. Considerable discussion is necessary to bring out the proper uses of such deoxidizers. There is a great need for deoxidizers whose products of oxidation are easily fusible at pouring temperatures so they will unite and rise to the top of ingot.

Producer Coal Affects Steel Quality

BY S. J. CORT

MR. TOY'S paper has brought out the extreme flexibility of the process, relative to the percentage of pig iron and scrap that may be used to meet local conditions, and the high-grade steel it can produce. Its limitations have also been brought out and some of these I wish to emphasize. The quality of the steel that an open-hearth furnace is able to make, depends in a large measure on the nature of the raw material used; the pig iron and producer coal being the two most troublesome items. Numerous tests have shown that the quality of steel from the basic open-hearth furnace varies directly with the blast-furnace operation. When the blast furnaces are casting "buck shot" iron and

Discussion of F. L. Toy's paper entitled, the Basic Open-Hearth Process, which was presented at the Oct. 22 meeting of the American Iron and Steel Institute, New York. The author, S. J. Cort, is superintendent of open hearths, Bethlehem Steel Co., Bethlehem, Pa.

varying widely from cast to cast in silicon and sulphur content, it is difficult to make a satisfactory grade of steel, although every corrective agency known to the steelmaker is employed. The open-hearth demands an iron rich in graphitic carbon showing an open gray fracture and leaving the hearth of the blast furnace with a high physical temperature, which means keeping up the coke ratio to secure the temperature, and sufficient lime on the burden to control the silicon in the iron. An excess of both carbon and lime must be present to insure the conversion of iron sulphide to calcium sulphide to give a low-sulphur pig iron properly reduced and free from slag.

The largest percentage of open-hearth furnaces today use producer gas as a fuel and no doubt will continue to do so for years to come. The difficulty in securing sufficient amounts of low sulphur coals, calls for a more careful study of the nature of the sulphur in the coal, its removal, and the absorption of the sulphur from the gas by the bath.

The sulphur occurs in the coal mostly as iron pyrites, while free sulphur, organic compounds, calcium sulphate and iron sulphate may be found. On gasification about 98 to 99 per cent of the sulphur content of the coal passes over from the producer in the gas as hydrogen sulphide, carbon bisulphide and sulphur dioxide. Some of these compounds break down dropping the sulphur in the flues and bottom of the regenerators and may be carried up the stack in the waste gases on reversal. The sulphur on entering the hearth is oxidized to sulphur trioxide either catalytically or directly by oxgen at the high temperature of the hearth. The sulphur trioxide readily reacts with lime forming calcium sulphate; calcium sulphate coming in contact with the iron in the bath may react as follows:

$Ca\ SO_4 + 4\ Fe = FeS + CaO + 3\ FeO$ and the iron sulphide is readily soluble in the bath.

The residual manganese in the bath generally will protect the bath from this sulphur absorption but not in all cases. With coal low in sulphur it is often possible to produce a steel with less than 50 per cent of the sulphur contained in the scrap and pig iron charged; while again, with a high-sulphur coal the bath may continue to go up in sulphur; both heats showing the same residual manganese in the bath with nearly identical slags.

As early as 1890 Ledebur raised the question of the effect on the quality of the steel of increasing the hearth area in building larger furnaces due to the larger surface of slag exposed to the gases. I have been connected with three different steel plants in which the depth of the bath and hearth area of the furnaces in the same plant varied. Using the same pig iron scrap and fuel the furnace with the deeper bath and smaller hearth area, consistently finished lower in sulphur. This has been the experience of other operators.

When we stop to consider that in a 75 ton furnace charging 180,000 pounds of scrap and pig iron which averages 0.040 per cent sulphur, only 72 pounds of sulphur goes in with the heat, while to melt and finish the heat 52,500 pounds of coal is used with for example 1.50 per cent sulphur content, approximately 787.5 pounds of sulphur enters the furnace with the gas. When we consider the large amount of sulphur entering with the gas as compared with the sulphur going in with the charge, the subject of the occurrence of sulphur in coal and methods for its removal will bear a closer investigation.

Furnace Construction

The present type of open-hearth furnace is an evolution of years of experimental work, some of which was founded on sound scientific basis, while a great deal was on the cut and try method. The chief difficulties we have to overcome are the high temperature required in the hearth, and the difficulty of getting refractories that will withstand the heat and chemical action.

I must take exception to Mr. Toy's suggestion that the open-hearth try a regenerator similar to the blast-furnace stove. In the case of the blast-furnace stove, a maximum temperature of only 2000 to 2200 degrees Fahr. is reached and the air leaving the stove will seldom exceed 1400 degrees Fahr. while the products of combustion from the open-hearth furnace will enter the checker chamber as high as 3000 degress Fahr. and carry with them a large amount of solid oxides. The air leaving the checker chamber to the hearth will reach 2400 to 2500 degrees Fahr. To confine this intense heat to a checker of small cross sectional area would result in the fusion and quick destruction of the checker brick. In addition, the majority of steel plants are built on low ground and to go down deep enough for a stove type checker you would encounter difficulty in keeping water out of the flues.

Mr. Toy's criticism of the duplex process on the lack of residual manganese is hardly justified. The average residual manganese in the tapping test of a duplex heat made from all blown metal at Bethlehem is 0.09 per cent manganese. The stationary basic open-hearth with 60 per cent hot metal charge, taking a run-off slag will not show any higher residual manganese in the tapping test, even if 2 per cent manganese iron is used due to the manganese being lost with the run-off slag.

The duplex process with its double conversion cost and 3 to 4 per cent lower yield from metal to ingots must depend on rapidity of operation, which gives a lower labor, fuel and rebuilding cost, if it is to compete with the straight basic operation. The use of hot metal in place of a high-carbon blow for a "kicker" materially retards the operation. The use of bessemerized metal in the stationary basic furnace has been repeatedly tried out, but has not given satisfactory results in either increased production or decreased ingot cost for the following reasons.

If the blown metal is put in a stationary furnace with only lime and scale charged, the tap hole will boil out continually, causing a great many heats to be lost and a large amount of time wasted in repairing. To overcome this taphole trouble sufficient steel scrap can be charged to melt down and protect it. This requires the blown metal to go in at a high carbon in order to furnish sufficient carbon to shape up the heat. With this procedure, the high blows would continue cutting out the front banks of the furnaces, causing heats to break out and long delays in repairing.

A combination process has been tried using sufficient scrap to protect the taphole, blowing the metal in the bessemer down to 0.010 per cent carbon and then adding hot metal for the "kicker." With this method it is found difficult to get the line to come up off the bottom, and a great deal of trouble is experienced with heats going through the bottom of the furnace. It has been found necessary to abandon the operation for reasons just stated.

Book Review

The Carbonization of Coal by Vivian Byam Lewes; cloth; 287 pages, 5¼ x 8¼ inches; published by Benn Brothers Limited, London, England, and for sale by THE IRON TRADE REVIEW; price $6, postpaid.

In dealing with this subject the author has avoided the use of scientific data as far as possible. The theory of the composition of coal has been elaborated upon. The 10 chapters contain discussions on the formation, classification, composition and distribution of coal; the form of retorts used in gas manufacture; coke ovens and their development; the conditions existing in the destructive distillation.

of coal and the primary gaseous products which arise therefrom; the formation use and decomposition of tar; coke; the nitrogen and sulphur of coal and their recovery; and modern coal gas. Under each of these headings detailed subtopics are listed both in the index and at the beginning of each chapter.

Among the 31 illustrations are reproductions of various retorts, extractor rollers, coke chambers, carbonizing chambers, beehive and other ovens and fractures in coke. All analyses are printed in table form.

Terminals Need Is Real Rail Problem

BY O. W. STILES

GREAT demand has been made by the railroads during the past few months for more freight cars, the carriers insistently contending that with more cars the rail congestion would come to an end. Those who have given the problem any thought realize the congestion is not due to lack of cars but to inadequate terminal facilities. There have been ample cars at all times to move the country's tonnage, but the outlaw strike created a car congestion on all lines. Terminals were especially affected, and soon were in an acute state of chaos, but the rail executives have been strangely silent on the subject of terminals, and the entire situation has been laid to lack of cars. This, we believe, is due largely to the training of rail officials. All their thought has been directed to transportation problems and the terminal problem has received no special thought or study.

Moving freight from terminal to terminal is strictly a transportation problem, while the terminal is the economic and business end of the system. The transportation problem has been magnificently solved, but in the handling of freight at terminals and terminal improvements, they are 50 years behind the march of American progress. Here lie the real troubles and wastes which are due to excessive handling costs, yet little, if anything, has been done in the way of systematic effort to solve this problem. It is high time for the rail official to realize his service does not end with the movement of the freight car.

The conditions are such that this is no longer the railroad's but the nation's problem.

Vast Tonnage In Terminals

The entire tonnage transported annually by the railroads of the country must go through the terminals. Ninety five per cent of this tonnage is car load, and 5 per cent l-c-l-freight. The centers of manufacture and distribution lie in the larger cities of the country. A large proportion of the freight enters them as carload freight and leaves as l-c-l, which added to the passenger traffic, greatly increases the perplextiy of terminal problems.

According to reports of the railroads themselves of the total cost of operation, one-third is terminal and two-thirds line haul. Calculations made indicate the average freight car is actually moving between one terminal and another only 11 per cent of the time. It is usually in the hands of the shipper or receiver about 37 per cent of the time. About 9 per cent of the time it is laid up for repairs, etc., and 43 per cent of the time it is in the process of being moved from the place where it is loaded or unloaded to the terminal where it is put in the trains or on transfer tracks.

The big problem confronting us is how to reduce the 37 per cent and 43 per cent and add it to the 11 per cent of the time the car is actually moving between one terminal and another.

Railroad executives have very kindly informed us in detail how the 37 per cent may be reduced. Some of the methods recommended by them are as follows:

Heavier loading of cars by raising of minimum weights for car load shipments.

A reduction in the detention of cars by means of adequate and flexible demurrage penalties.

Limiting the number of reconsignments of freight in transit.

A restriction in the use of "to order" bills of lading.

Elimination of the bill of lading as a commercial instrument.

But they have been strangely silent as to how a reduction in the time car is in process of being moved in and around and through terminals, as represented by the 43 per cent, may be accomplished, and we are prone to believe, as long as the terminals are in the hands of the railroads this strange silence will continue.

At the present time each and every city in the United States feels that it has a prior claim on the financial resources of the railroads serving it, for special terminal facilities. It is, of course, impossible to give each city the best, and since the terminal end of railroading is the business end, and because the industrial life of each community depends upon its own terminal facilities, it appears to logically follow that the financial interests of each community should on a valuation basis take over the railroad property inside of the outer classification yards, organize their own terminal, finance their terminal for what it demands, and operate their terminal for the mutual benefit of those dependent upon its success, basing their charge on the individual service rendered to each and assessing each for improvements or betterments which will result in not operating economies through which each will benefit.

Local Co-operation Needed

The locally owned terminals will take joint cars for their delivery to the outer yards of the competing railroad which gives them the best transportation dispatch to a similarly owned joint terminal at other points. Thus would shippers, individually and collectively, pay for what they get, and enjoy the results of the co-operation they give their own terminal instead as now harnessing on the public at large, through increased tariffs, the perquisites they enjoy through long established, nonprofitable switching tariffs which should have been abolished years ago. By this means, production can run the business end of railroads, and at each point settle between themselves their own priorities etc., and railroads can run the transportation end of the railroads, in which they are capable of discharging their obligations, as the shippers should be capable of settling their own intra-terminal disputes.

If, in the new field of transportation which will develop through our present effort to "unscramble the eggs," the mutualizing of terminals at each and every point in this country can be made effective, each community, through its co-operative experience, will capitalize or forfeit its own industrial possibilities without the alibi of inadequate transportation, and the competing carriers will have to give to each community the transportation necessary because their only means of competition will be the expediting of

From a paper submitted to the Material Handling Machinery Manufacturers' association at New York, July 28. Mr. Stiles is with the Lakewood Engineering Co., Cleveland.

freight movements, instead of as at present the blockading of competition.

The property of the railroads within outer classification yards can be taken over on a valuation basis, extending as desired, facilities constructed as its own demands recommend, and its own patrons charged for service on the basis of cost, making up and delivering under its own intra-terminal charges, consolidated cars to the classification yard of the railroad giving the quickest transportation service. Under joint arrangement to be made at the time these terminal properties are taken over from the carriers, it will be established on what basis carriers would enjoy the use of terminal rails for the exclusive movement through that terminal of its through line business. Local terminals would not then be assessed by political interests the exhorbitant charges for right of way, etc., as are now demanded of railroads whenever they express a desire to meet the extension demands of any commuinty.

Terminals Need Individual Attention

These thoughts are based on the proven business principle that complicated subjects demand individual treatment. No railroad system can give unbiased thought to each and every terminal, whereas the shippers within that terminal, with their own terminal facilities, as their own individual problem, will early solve the complexities and internal disputes which are now too big a problem for the railroads on account of their inability to legally arbitrate such matters to the satisfaction of all interests.

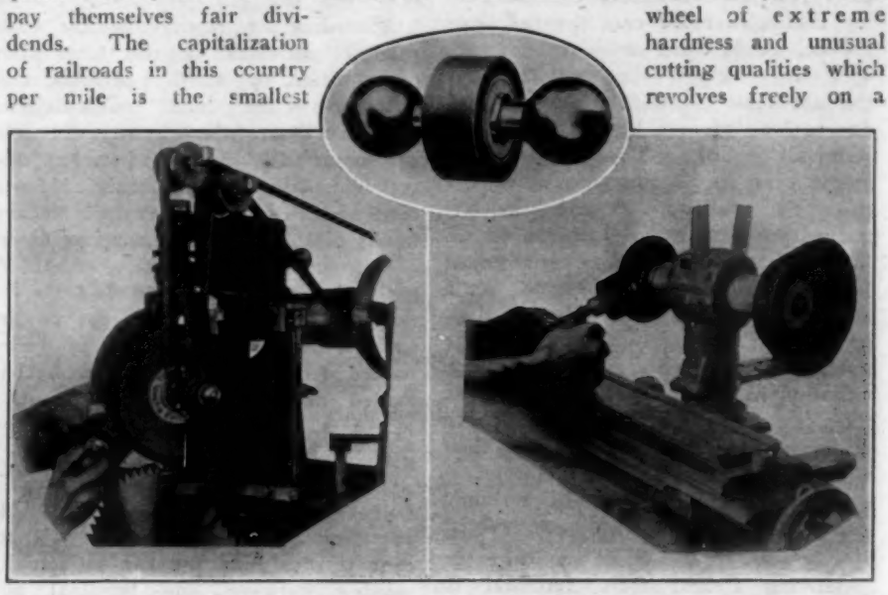
Under present conditions, little can be accomplished by the railroads themselves. Their credit at the present time is seriously impaired, and this credit must be rehabilitated. Any activities undertaken by the railroads themselves at the present time must be largely confined to improvements in minor facilities, operating methods and practices, and studies and plans for the future. Therefore this problem requires the united co-operation and best thought of the industrial as well as the railroad world. What can be immediately done is get the cars back on the home lines, repair more cars, increase the miles per car per day, increase the loading of cars, quickly repair and modernize more locomotives, and install efficient methods of handling freight throughout terminals by the use of modern mechanical methods for handling freight and material.

We have been prone to view transportation problems as belonging strictly to the railroads, and it has been left up to them to sink or swim. They have been made the football of every aspiring politician for the past 15 or 20 years. The question confronting us is not one of whether the roads shall be able to support themselves. It is a question of whether our transportation system shall be kept up to the standard necessary to take care of the country's business properly. The government has chosen to permit private operation of the roads, therefore, it is necessary that we permit the owners of the roads that profit and equipment which is necessary to enable them to develop and maintain their property, give adequate service, and at the same time pay themselves fair dividends. The capitalization of railroads in this country per mile is the smallest of any country in the world. We have the lowest freight rates of any country in the world, and the shipper or manufacturer who objects to increasing freight rates should move his factory or plant to Great Britain, France, Germany, Austria, Italy, or anywhere else, in order that he may appreciate what American freight rates are, as compared with those in other countries.

American business has never been found wanting in an emergency. The opportunity for progress in business is as great today as at any other time in the history of the country. Once aroused, American business can accomplish wonders. Our resourcefulness, adaptability and ability to organize and carry on in times of stress have placed America in the foreground of the world's affairs. Therefore, instead of resigning ourselves to lamenting over the deplorable situation, blaming the other party, and prophesying dire results, let us realize that what is necessary is the same spirit of co-operation which was so manifest during the war, and enable the country, and particularly the railroads to pass safely through this crisis, by immediately and substantially increasing the efficiency with which existing rail facilities can be rehabilitated and operated.

Employs New Principle in Grinding Wheel Dresser

A new method of dressing grinding wheels has been developed by the Oliver Machinery Co., Grand Rapids, Mich., in which an abrasive wheel is substituted for the diamond usually employed in trueing grinding wheels. The dresser consists of a 1½ x 4-inch wheel of extreme hardness and unusual cutting qualities which revolves freely on a finely adjusted axis. When brought in contact with the revolving grinding wheel, the surface is dressed down to the required form quickly. The dressing wheel receives inertia due to the weight of balls which are attached to the wheel arbor and serve as handles. It is stated that a big cutting factor is produced when the dressing wheel is held against the grinding wheel at an angle and that a gyroscopic action is set up by the rotation of the wheel and its axis, which is produced through this contact with the rapidly revolving wheel.



THIS NEW DRESSING WHEEL, INVOLVING THE PRINCIPLE OF HOLDING ONE ABRASIVE WHEEL AGAINST ANOTHER, CAN BE USED ON GRINDING WHEELS OF VARIOUS SHAPES

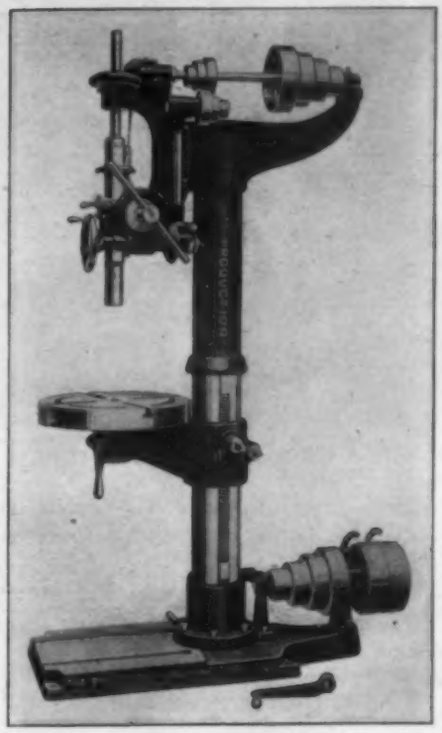
The grinding wheel dresser is designed primarily for fine wheels 1 inch or less in thickness. It can be used to turn a bevel or V-edge or to true up a square edged wheel. It also can be used to supplement the work of a diamond dresser on large coarse snagging wheels when a smooth grinding surface is desired. As shown in the accompanying illustration, the dresser is made in two types so that bevel and cup shaped wheels may be easily trued. The wheel is also mounted for use with a tool post on standard types of cylindrical grinding machines.

New 22-inch Drill Has Four Speeds

Bronze bushed throughout, the 22-inch upright drill with stationary head recently developed by the Production Machine Tool Co., Cincinnati, is built to drill, bore, tap and face holes within its range up to and including 1¼-inch diameter. This machine is shown in the accompanying illustration.

Each of its parts from the smallest stud to the largest casting, has been designed to withstand the strain to which it may be subjected in operating. Rigid in every respect, it has centralized control which greatly increases operating convenience. The machine is regularly built for power feed but this feature may be omitted. Back gears and tapping attachment can be added. Jigs and fixtures are used in the machining of all parts, thus making them interchangeable.

Spindle speeds, of which there are four, 20, 33, 53 and 88 revolutions per minute with back gears in and 117, 196, 318 and 530 revolutions per minute with back gears out. It has three power feeds of 0.006, 0.010 and 0.015 inches per spindle revolution. The minimum and maximum distances from spindle to base are 35 and 45 inches, respectively. The minimum and maximum distances from spindle to round table are 9¾ and 25¾ inches, respectively, while the spindle's vertical traverse with and without trip dog is 9½ and 10 inches. The diameters of the round table, the spindle above the sleeve and the column are 18½, 1⅞ and 6 inches, respectively.



DRILL IS DESIGNED TO DRILL, BORE, TAP AND FACE HOLES UP TO 1¼-INCH DIAMETER

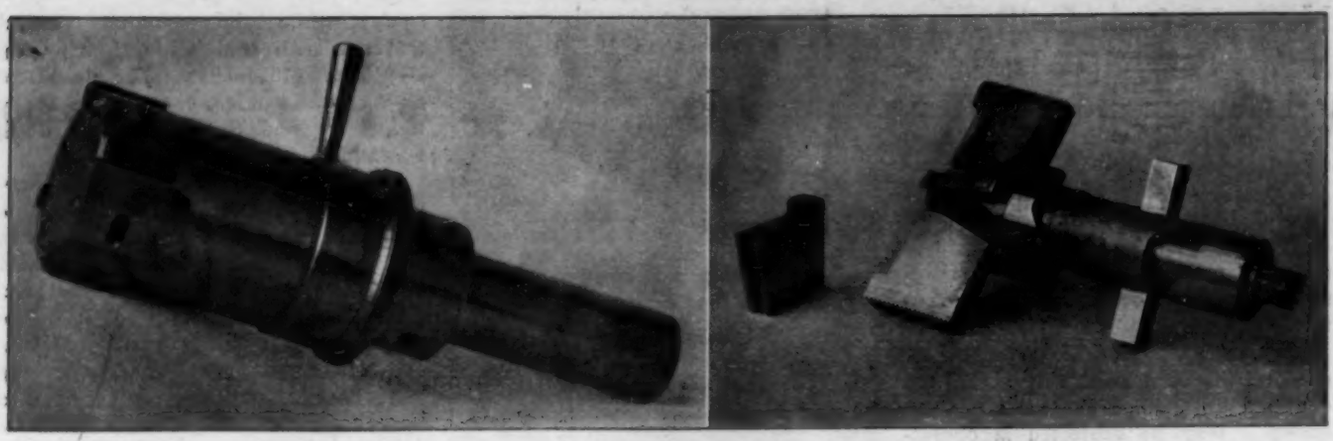
The base is well ribbed and is provided with T-slots. The column is round, of tubular section and extends through the table arm into and flush with the top of the yoke or overarm, which is firmly bolted to it. The table arm is a single casting of box construction, thus eliminating a cap and the necessity of splitting it into two sections. It is provided also with a clamp for the round table. The table is amply ribbed, provided with four T-slots of the same size as the slots in the base and four radius slots for clamping work. A rack and pinion with worm elevates the table, the worm being located on the right hand side within easy reach of the clamp for the table arm, and operative from the front of the machine. The box type head with spindle driving gear bearing is cast integral, thus permitting the spindle bearings to be bored and reamed at one setting. The overarm or yoke is bored and fitted to the column and provides rigid support for mounting the motor when required.

Geared Head Turret Lathes Pass Tests

EXHAUSTIVE tests recently were completed by the Warner & Swasey Co., Cleveland, on two new geared head turret lathes, Nos. 4 and 6. Front and back views as well as detail views of the heavy duty carriage and the gearing in the head are shown in the accompanying illustrations. The first model of this type was finished by the builder early in 1919 and was placed in charge of its testing engineer. It was thoroughly tested under every condition which might be encountered in outside shops. Then six machines of each size were installed in shops outside of the company's own plant and operated on work for which they were designed, namely machining alloy steel gear blanks, long drilling operations in the solid, taking heavy facing as well as forming cuts. Because of the satisfactory results achieved, the machines now are being placed on the open market. They are sufficiently flexible to operate on several different diameters on one piece, or on different pieces of different materials and diameters.

The geared head construction of these machines is said to deliver four times the power of the ordinary geared friction head and double the power of the double-friction back-geared type. Less effort therefore, is involved in moving the controlling levers. The geared head consists of steel gears of coarse pitch and wide faced, running in oil. The oil bath also lubricates the bearings. Two gear sets are mounted on the front

LEFT AND RIGHT ARE FRONT AND REAR VIEWS OF NO. 6 WARNER & SWASEY GEARED HEAD TURRET LATHE. TOP SHOWS GEARING IN HEAD. INSET SHOWS HEAVY DUTY CARRIAGE



CHASERS OF NEW COLLAPSIBLE TAP ARE RELEASED AT THE RIGHT POINT WITHOUT USE OF SPRINGS

shaft, while the third set and the reverse friction clutch are mounted on the back shaft, resulting in 12 spindle speeds and reverse. The machines are adaptable to various types of motor drive, either geared directly to the motor, chain drive, or belt drive with idler to driving shaft.

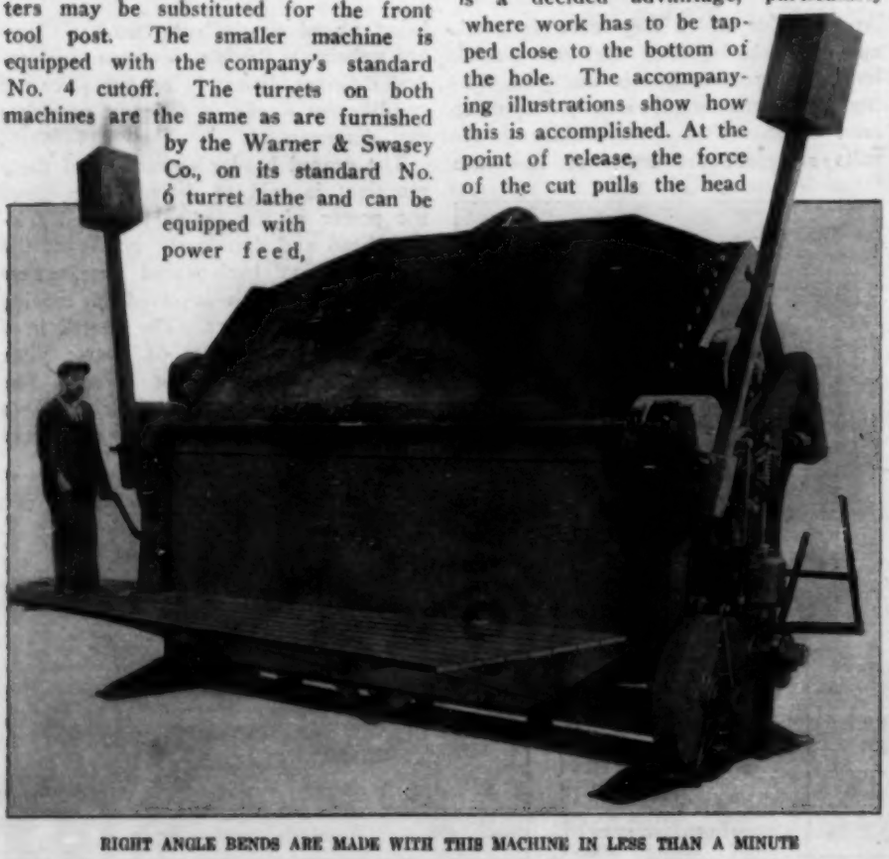
The largest of the machines can be equipped with the company's standard type of cutoff as shown in the illustration, or with its new heavy duty carriage, which is especially suitable for heavy cuts and heavy forming operations. The range of six power cross feeds provides for all facing, forming and cutting-off speeds. The gears in the feed box controlling the carriage, as well as in the carriage apron are made of a special steel. These gears also run in oil. A square turret to carry four cutters may be substituted for the front tool post. The smaller machine is equipped with the company's standard No. 4 cutoff. The turrets on both machines are the same as are furnished by the Warner & Swasey Co., on its standard No. 6 turret lathe and can be equipped with power feed, having four changes. The maximum capacities of the new machines are as follows:

	No. 4	No. 6
	——Inches——	
Round bar stock, diameter	1½	2¼
Length turned	10	12
Swing over bed	16	20⅜
Swing over cross slide	7	9¼

New Collapsible Tap Has No Releasing Springs

In operating the new collapsible taps recently added to the line of threading machines and tools manufactured by the Rickert-Shafer Co. Erie, Pa., springs are not utilized to collapse the chasers. The manufacturer claims that this tool is positively acting since it is not possible for it to stick, which is a decided advantage, particularly where work has to be tapped close to the bottom of the hole. The accompanying illustrations show how this is accomplished. At the point of release, the force of the cut pulls the head from the locking pins and revolves it to cause the cams on the core to act. This pulls the core back and the chasers are drawn in the head, thus clearing them from the work.

The taps are manufactured in sizes from 1 to 10 inches or larger and, it is said, will hold to size within the most exacting limits thereby dispensing with sizing hand taps. They also can be combined with boring, reaming or chamfering tools and will increase production by eliminating additional operations and set-ups. Adjustments can be made to fractional thousandths of inches.

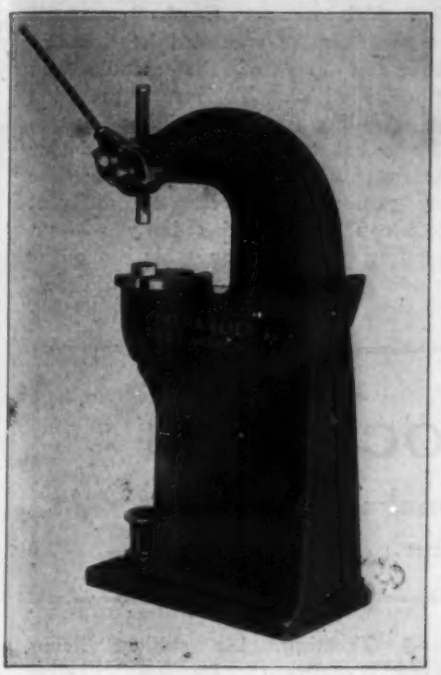


RIGHT ANGLE BENDS ARE MADE WITH THIS MACHINE IN LESS THAN A MINUTE

Plate Bending Brake Has Rapidity of Action

A large plate bending brake, built by the Dreis & Krump Mfg. Co., Chicago, for the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., and claimed to be the largest machine of its kind in the world, has the feature of rapid operation. The time consumed in making a right angle bend is less than one minute. Another feature is that no dies are required for different thicknesses of metal, radius of bends or degree of angle to which plates are bent. As shown in the accompanying illustration, this machine, which weighs 30 tons, has a capacity for bending plates 12 feet long up to ¾-inch thick cold and is driven by a 40-horsepower direct connected motor.

Construction of the brake is of steel throughout, the main body being constructed of large steel plates braced with truss rods and the housings of cast steel. The links which connect the upper and lower jaws are forgings. Counter weights balance the bending leaf. The motor is mounted within the machine and drives the friction clutch shaft which has direct and reverse friction clutches. An idle gear provides the reverse motion for



UNIVERSAL PRESS TAKES MANY AUTOMOBILE PARTS WITHOUT EXTRA EQUIPMENT

lowering the bending leaf. Raising and lowering of the upper jaw is accomplished by means of a power clamp consisting of a manganese bronze gear mounted on an eccentric which is controlled by a lever on each end.

A draw bolt on each end provides adjustment for sharp and rounding corners. As sharp as 1½-inch inside radius can be bent on ¾-inch plates, full length and as large a radius as is desired. The nose of the upper jaw is faced with a tool steel edge. The opening between jaws is sufficient so that four sides of a plate can be flanged by inserting blocks between the two side flanges after they have been bent. After the plate has been clamped, a positive friction clutch on the drive shaft is engaged, thus actuating the bending leaf which is driven by three steel arched racks.

Drill Clamp and Support Are Adjustable

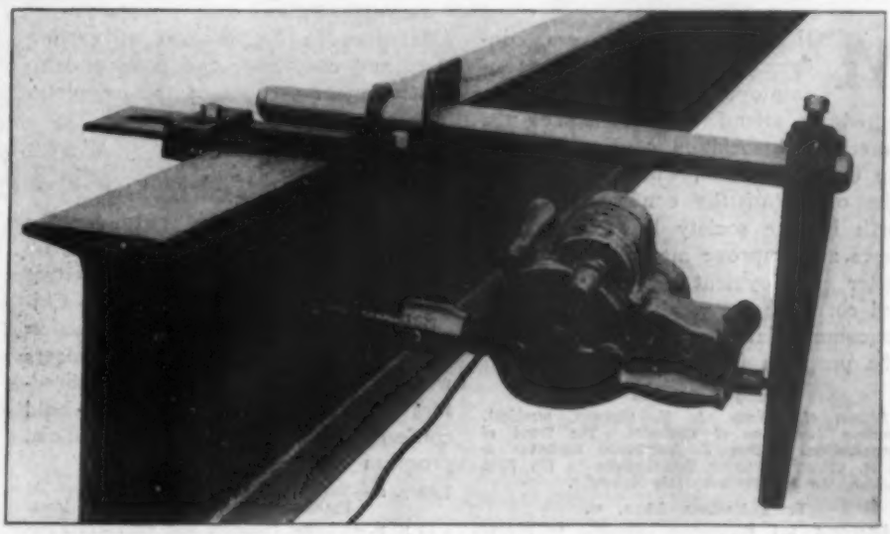
Drilling the web of I-beams usually is done by a compressed air or an electric drilling machine which is held in position by a rig known as a goose neck or an old man. Considerable time is lost in adjusting this type of rig. The Poyser-Buscher Co., Canton, O., recently developed and patented a drill clamp and support which makes possible the drilling of any number of holes with one adjustment. As shown in the accompanying illustration the slotted support is clamped securely to the beam by two dogs placed on either side of the flange. On one end of this support is a guide and U-clamp through which the supporting arm slides when adjusting the supporting bar to bring the drilling machine in its operating position. The supporting bar carries a centering arm which is held in place by a lock nut and acts as a brace for the feeding screw of the drilling machine.

Arbor Press Is Developed for Automotive Field

A general utility arbor press, especially adapted to miscellaneous work in garages, repair shops and general machine shops has been developed by the P. A. Geier Co., Cleveland. The press, shown in the accompanying illustration is known as a universal press and its net weight is 700 pounds. Without extra equipment it is capable of taking all automobile wheels and many parts in automobile, trucks and tractors. The press has a hardened steel pinion; the rack is made of special steel with an 8/10 pitch stub tooth; and all compound lever gears are made of the same material with 6/8 pitch stub tooth.

Some of the general specifications of the press follow:

	Inches
Height from floor	58
Height of throat over plate	13¼
Height of plate	1¼
Largest opening in plate for arbor	2
Opening with plate removed	21½
Maximum diameter of work	33
Leverage (compound in) 160 to 1 pound	
Leverage (compound out) 40 to 1 pound	
Length of lever	22½
Length of rack	16
Diameter of rack	1¾
Floor space required	16½ x 32



ANY NUMBER OF HOLES MAY BE DRILLED IN I-BEAMS WITH ONE ADJUSTMENT OF THIS DRILL CLAMP AND SUPPORT

Develops Spiral Cutters and Grinding Machine

Advantages of spiral cut teeth for plain milling cutters have been recognized for some time but while this type of tooth is desirable for formed cutters, mechanical difficulties of manufacture and resharpening of such cutters have prevented its use. The Pratt & Whitney Co., Hartford, Conn., however, recently has introduced formed milling cutters with spiral teeth and eccentric relief.

These new cutters, one of which is shown in the accompanying illustration, combine the advantages of older types of formed cutters, eccentric relief, free cutting qualities and accuracy. Owing to the spiral tooth design, each tooth comes into contact with the work progressively. Cutting takes place not along a line but at a point which travels in a shearing cut across the face of the work the full width of the cutter as the latter revolves. The spiral chosen is such that one tooth is entering the cut before the preceding one has cleared it. Since these cutters are eccentrically relieved, resharpening is

GRINDER DESIGNED FOR SPIRAL MILLING MACHINE CUTTERS. (INSET) TYPICAL STYLE OF CURVED CUTTER

accomplished by grinding on the face of the tooth. Various shaped cutters may be made to conform with templets of the contours to be milled.

For grinding the new cutters, the company has designed a special grinding machine, which will accommodate the grinding of all types of milling cutters and hobs with straight teeth as well as fluted reamers and similar tools. As shown by the accompanying illustration, the machine is equipped with a conical grinding wheel which presents but a single line of contact between the wheel and the work at any one time. The wheel, therefore, is able to follow accurately the helical path of the tooth and to grind the cutting edge to the required form. Design is such that the machine imparts a combined traverse and rotary movement to the cutter. The table on which the cutter is mounted can be swivelled horizontally about an axis of the spindle and grinding wheel. To insure precision for grinding formed milling cutters with spiral teeth, an indexing device successively brings the teeth in line for grinding. Cutters of different sizes can be ground radially without resetting the head or table since the grinding line is always radial.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

MORE than 50 employers, educators and representatives of employment bureaus are expected to attend the meeting of the American Association of Engineers at the Congress hotel, Chicago, Nov. 12. The object of the conference as set forth by the society is "to exchange views and improve methods of making better employment service available and correlate the work of colleges and noncommercial employment bureaus." The program follows:

Morning Session 9 a. m.

Address of welcome, L. K. Sherman, president, American Association of Engineers. The Trend of Specialization, William E. Vogelbach, Sanderson & Porter, Chicago. Placing the Graduate in His First Position, A. B. Crawford Yale university.

Group Meetings, 11 a. m.

Employers and employment managers, employment bureaus, representatives of educational institutions will have general discussions.

Afternoon Session 2:30 p. m.

Civilian Instructor Personnel for the Army, P. B. Woodworth, United States army. Education in the Permanent Army and Its Relation to the Employment Situation, A. B. McDaniel, United States army. What the Employer Requires When Engaging an Engineer, Frank D. Chase, Frank D. Chase, Inc., Chicago. Fitting College Students for Success, J. H. Libberton, Universal Portland Cement Co., Chicago. Summer Employment for Men in Teaching Service, Discussion by W. M. Wilson, University of Illinois. Employment Office Administration and Technique, George P. Hambrecht, industrial commission of Wisconsin.

Evening Session 7:00 p. m.

Vocational Analysis and the Engineer, A. F. Payne, University of Minnesota. National Clearance—A Cooperative Factor in Education and Industry, John B. Densmore, United States employment service. Vocational Advisement as a Prime Function of Educational Institutions, James P. Munroe, federal board for vocational education. Engineering Opportunities with Large Mercantile and Mail Order Houses, R. O. Kramer, Montgomery Ward & Co., Chicago.

* * *

Explains Cutting of Cast Iron

The process of cutting cast iron with gas was explained in a lecture before members of the Pittsburgh section, American Welding society, by Alfred S. Kinsey, professor of shop practice of the Stevens Institute of Technology, in the Carnegie lecture hall, Pittsburgh, on Friday night, Oct. 29. Professor Kinsey explained the differences in the process of cutting steel and cast iron, and gave a demonstration of the use of the oxyacetylene torch.

* * *

To Hold November Meeting

Lightning protection is to be the theme of four papers which will be presented at the American Institute of Electrical Engineers' meeting, Chicago, Nov. 12. The electrical section of the Western Society of Engineers will participate. The board of directors and committees will also hold conferences at this time. The official program follows:

3:00 p. m.—Board of directors Western Society of Engineers' rooms, 1735 Monadnock block.

5:15 p. m.—Informal reception, City club, 315 Plymouth court.

5:45 p. m.—Dinner, City club.

7:30 p. m.—Technical session, City club.

Lightning Arrester Spark Gaps—II, by C. T. Allcutt, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Life and Performance Tests of 0 F Lightning Arresters, by N. A. Lougee, General Electric Co., Schenectady, N. Y.

Studies in Lightning Protection on 4000-Volt Circuits—II, by D. W. Roper, Commonwealth Edison Co., Chicago.

Electrostatic Condensers, by V. E. Goodwin, General Electric Co., Schenectady, N. Y.

* * *

Organizes New Chapter

At a meeting held at the Syracuse, N. Y., chamber of commerce on Oct. 19, and attended by 175 heat treaters, the Syracuse chapter of the American Society for Steel Treating was formed. This is the first chapter to be added to the national society since the recent almalgamation of the American Steel Treater's society and the Steel Treating Research society. Seventy-six names were placed on the roll as charter members of the new chapter. The principal address of the evening was presented by W. H. Eisenman, Chicago, national secretary of the American Society for Steel Treating, his subject being, "Heat Treatment: Its Past, Present and Future." Officers of the new chapter are: Chairman, Howard J. Stagg Jr., assistant manager, Halcomb Steel Co.; vice chairman, Frederick C. Raab, metallurgical engineer, Brown-Lipe-Chapin; and secretary-treasurer, William F. McNally, Willys Corp., New Process gear division.

* * *

Indiana Engineers Elect Officers

D. E. Nauman of the Midwest Engine Co. was elected president of the Association of Manufacturers' Cost and Efficiency Engineers of Indiana, at a dinner meeting held at the Hotel Lincoln recently. Other officers named were H. J. Wilson, Warner Gear Co., Muncie, vice president; G. F. Buxton, vocational education department, Indiana university, Bloomington, secretary; and D. M. Milholland, Milholland Machine Co., treasurer. R. A. Mouron, statistician, Nordyke & Marmon Co., spoke on "Graphic Presentation of Business Control," illustrating his talk with a number of charts.

Convention Calendar

Nov. 10-12—Society of Industrial Engineers, Pittsburgh. S. T. A. Loftis, 327 South LaSalle street, is secretary.

Nov. 11-12—National Tool Builders' association, dates for fall convention advanced from Dec. 2 and 3.

Nov. 12—American Institute of Electrical Engineers, 1735 Monadnock building and City club, 315 Plymouth court, Chicago.

Nov. 12—American Association of Engineers. Conference on employment and education, Congress hotel, Chicago. The headquarters of the association are at 63 E. Adams street, Chicago.

Nov. 17-18—National Founders' association. Annual convention, Hotel Astor, New York. J. M. Taylor, 29 S. La Salle street, Chicago, is secretary.

Dec. 7-10—American Society of Mechanical Engineers, New York. Forty-first annual meeting, Engineering Society building, New York. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INVOLVING an expenditure of approximately $3,500,000 the American Car & Foundry Co., New York, is making improvements to its Buffalo plant. The new plant now under construction will be utilized to build all-steel cars at the rate of from 20 to 30 cars daily. It will be equipped with the most modern machinery and labor-saving devices obtainable and a number of features new to the car-building industry will be introduced.

In addition to the new car plant a modern office building also will be erected on property recently acquired across Babcock street. The soft foundry at the Buffalo plant has been completely re-equipped and now is engaged in quantity production. The Niagara wheel department has also been brought up to a high state of efficiency.

At Depew, during the great war, the company was the largest producer of 155 millimeter shell. Immediately following the armistice, the entire Depew plant was reconstructed and now is capable of building 20 cars per day. E. C. Englehart is assistant district manager at Depew in charge of the company's operations at that point, reporting to A. H. Gairns.

* * *

ARMAND WEILL, formerly connected with Arthur Seligman, agent for the British Aluminum Co., Ltd., of London, has opened offices at 229 Madison avenue, New York city, under the firm name of the Armand Weill Co. He will deal in metals, ores, chemicals, and iron and steel.

* * *

C E. ADAMSON, East Palestine, O., manufacturer, is promoting a plant in that city to manufacture fabricated steel products. Citizens are asked to donate $5000 for a railroad siding to the plant. The products will include electrically-welded tanks of various types and products .

* * *

DOUBLING its capitalization to $100,000, the Wheeling Machine Products Co., Twentieth and Main streets, Wheeling, W. Va., will expand its manufacturing facilities for increased production of automatic screw machine and turret lathe products. E. W. Krause is treasurer and general manager of this company and A. C. Kennen is secretary.

* * *

THE HARLEY CO., Springfield, Mass., brass founders and drop forgers, at its annual meeting held Oct. 20, elected the following officers; Henry H. Skinner, president; Edwin Krause, vice president; John D. Stephens, treasurer. Charles E Childs, Northampton, Mass., and William F. Bartholomew, Boston, were added to the board of directors, the former members of which were re-elected.

* * *

OTHER than a temporary loss due to delay in carrying out large contracts, the St. Louis Car Co., St. Louis, ultimately will not sustain a financial loss from the disastrous fire at its shops recently. These were fully insured. Partial production already has been resumed and the company gradually is rearranging the undamaged buildings and machinery to increase production with present equipment. A new building is contemplated at some future date according to Edwin B. Meissner, vice president.

* * *

SEVERAL additions to its plant are being erected by the Andrews Wire Works of Canada, Ltd., Watford, Ont., at a cost for buildings and equipment of over $50,000. Machinery needs have been filled with the exception of some minor equipment. The principal addition will be one story high of brick and steel construction, containing about 8000 square feet of floor space. A tinning room, a new office and a boiler room also are being added and all construction is supposed to be finished by Jan. 1.

* * *

W C. DURANT, president of the General Motors Corp., has entered the investment banking field as head of the recently organized Durant Corp., which will interest itself in the distribution on a partial payment plan of municipal bonds and stocks of ably manager industrial corporations. For the time being the corporation is specializing in General Motors common stock, but it is said that it will be able soon to handle other securities. The new corporation is not a subsidiary of, or controlled by General Motors. It has been incorporated under the laws of New York, with a capital of $20,000. The officers in addition to Mr. Durant, are P. D. Wagoner, vice president, and H. W. Alger, secretary and treasurer.

* * *

THE Falls Rivet Co., Kent, O., announces the purchase of the cotter pin business of the Ohio Wire Goods Co. of Akron. The cotter pin company is only a part of the activities of the Ohio Wire Goods Co. The other developments remain intact at the Akron plant. The machinery used in making cotter pins will be moved to the Falls plant. It is stated that Lawrence Kneifel of Kent who has been interested in the Ohio Wire Goods Co. will take charge of the new department at the Falls plant.

* * *

LOCATED about 5 miles east of Phoenix, Ariz., the new plant of the Arizona Gypsum Co., will be 36 x 130 feet. It will be 32 feet high and will be utilized for the manufacture of plaster, hollow and solid building blocks, plaster board, fertilizer and other gypsum products. The company's raw gypsum crushing capacity will be approximately 250 tons per day, while the calcining capacity will be about 150 tons daily. Operations are expected to commence some time in January.

* * *

THE Air-Way Electrical Appliance Corp., Toledo, O., a new $3,000,000 concern incorporated under the laws of Delaware, has taken over the plants of the Air-Way Co. and the Arrow Mfg. Co. The Arrow factory, 614-22 Broadway, and the two Air-Way plants on Auburn avenue will be operated. Vacuum cleaners, electric washing machines, ironers and dishwashers, armatures and transformers will be a part of the output. Pratt E. Tracy is president, Harry Haudenschild is vice president and general manager, and L. G. Pierce, secretary-treasurer. The following are directors: Marion M. Miller, C. O. Miniger, Marain V. Kelley, Charles Bunting, Andrew Teller and Attorney Thomas H. Tracy.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PURCHASE of the Acme Universal Joint Mfg. Co., Kalamazoo, Mich., by the Hartford Automotive Parts Co., Hartford, Conn., gives the latter company control of the patents on the universal joint made by the Acme company, which is similar to the one manufactured by the Hartford company. The Kalamazoo plant will be operated as Plant K of the Hartford company and its treasurer, E. L. Pollock Jr., will be in charge. The personnel of the Kalamazoo organization will largely be retained. New machinery is being installed in a department recently established by the Hartford company for the development of a hydraulic compensating clutch invented by Richard T. Cooke. This clutch is a rotary shock absorber, installed on the propeller shaft of any automobile and absorbs all starting shocks. The clutch has never been sold on the open market and the Hartford company will be the first to commercialize it. An additional force of 100 skilled mechanics will be required. The clutch first will be developed for automobile trucks, although it is applicable for pleasure cars, and a complete line will be made.

* * *

RECENTLY the Greene-Wolf Co., Inc., 30 Church street, New York, increased its authorized capital stock from $20,000 to $100,000. It plans a new modern warehouse, with adequate facilities for the distribution of iron, steel and tubular products, large stocks of which will be carried. The officers remain the same: President, D. Greene; vice president, M. J. Baumgarten; and secretary-treasurer, G. William Wolf.

* * *

OF BRICK construction with steel trusses and a monitor roof over the fires, the proposed foundry of the Jefferson Brass Foundry, 209-11 King street, Brooklyn, N. Y., will be 40 x 96½ feet, inside dimensions. This will be erected on a plot of ground 100 x 1000 feet and will be equipped with 12 furnaces comprising two each Nos. 200, 100, 80, 60, 50 and 35. Provisions are to be made for additional furnaces, to be installed as needed. A crane will travel the entire length of the building for pouring of metal and for transferring heavy pieces of floor molding.

* * *

BANKERS and manufacturers of Hancock, Md., have organized a $500,000 company for manufacturing steel and steel products. Their organization is known as the Hancock Steel Co., and its officials include J. Frank Fields, president; W. Riley Daniels, vice president, and Roy N. Daniels, secretary-treasurer. This new enterprise will absorb several small plants and build large works on a 20-acre site near Brosius, in West Virginia.

* * *

FORMED for the purpose of making spark plugs for internal combustion engines, the Fire-Rite Electric Co., 237 Kensington avenue, New Britain, Conn., is assembling its product, having the parts made on contract. It does not intend to build at present. Frederick E. Carlson is president; John A. Andrews, treasurer; John Lundquist, secretary, and these with Albert O. Madison, Charles Bergren, Oscar Carlson and Albert Huneck form the board of directors.

* * *

CONSIDERABLE progress now is being made in the construction of the new sheet mill plant of the Chapman Price Steel Co., Indianapolis. The first sheet mill is expected to be placed in operation in January, 1921. Officers of the company are: Niles Chapman, president; L. H. Price, treasurer and sales manager; J. J. Beck, vice president and manager of sheet sales; G. C. Hurley, vice president; R. H. Lewis, vice president and assistant sales manager; H. J. Little, secretary and manager fabricating department.

* * *

WITH an annual capacity of producing 10,000,000 feet of lumber, a new sawmill and a new planing mill of corresponding size will be built at Oshkosh, Wis., by the Fuller-Goodman Co., which has taken over the interests of the estate of Col. S. W. Hollister in the firm of Hollister, Amos & Co., following the destruction of the plant by fire some time ago. Carl W. Hollister is retained as general manager of logging and manufacturing. The new mills will require an entirely new equipment of woodworking machinery, tools, motors, etc.

* * *

SINCE the Standard Gear Co., 700-704 Commonwealth avenue, Detroit, was incorporated to succeed the Langtry Machine & Tool Co., the W. M. B. Machine Co., the Michigan Standard Gear Co., the Detroit Standard Gear Co., and the Mead Mfg. Co., it has made some extensive alterations which make for efficient production. It likewise took out a building permit to erect an addition but owing to the high cost of building and labor, action has been postponed for the present. The consolidation of the various companies as mentioned, gave the new company a fairly well balanced equipment for gear cutting, piston ring manufacture as well as general chuck and bar work. The company is capitalized for $100,000 and while some of the stock is held by its foremen, the majority is in the hands of its officers, Dell A. Mead, president and treasurer, and W. R. Mead, vice president and secretary. The company manufactures many reverse gears for motor boats.

* * *

LAND has been purchased and leased in Euclid Village, east of Cleveland, by the Globe Motors Co., recently organized by President Charles H. Davies, who is the founder of the Supreme Motors Corp., Warren, O. The land comprises one parcel 320 x 1900 feet paralleling Euclid avenue from Chardon road to Bell road and it is connected with another parcel 240 x 600 feet extending from Euclid avenue to the first section. The new company proposes to build a plant for assembling a small pleasure automobile, in which will be used the motor made by the Supreme Motors Corp., at Warren. The first unit of the plant will comprise 40,000 square feet and eventually the plant will cover an area of 180,000 square feet. The seller of the larger tract was the Ambler Realty Co., and the consideration is said to be approximately $150,000. Other officers are W. E. Telling, vice president; F. W. Staffeld, vice president of the State Banking & Trust Co., Cleveland, secretary; and L. E. Holmden of the Guardian Savings & Trust Co., treasurer.

Obituaries

DANIEL M. WRIGHT, secretary-treasurer and general manager of the Henry & Wright Mfg. Co., Hartford, Conn., manufacturer of drilling machines, died in Hartford hospital, Oct. 27, at the age of 50, from the effects of an operation. He had been ill about six weeks. Mr. Wright was born in Philadelphia June 5, 1870, but he early removed to Hartford, where he later with others, founded the Henry & Wright company. He also was president of the Russo-American Mercantile Co. and director of the Hartford Morris Plow Co. He also was president of the recently formed Claflin Oil Derrick Co. Mr. Wright served as first vice

DANIEL M. WRIGHT

president of the National Machine Tool Builders' association at one time; he also served as president of the Hartford branch of the National Metal Trades association; as president of the Hartford board of trade and as vice president and later as president of the Hartford chamber of commerce. Mr. Wright was specially interested in mineralogy and standardization, notably in the terminology of machines.

Henry H. Gove, vice president and general manager of the Gove Motor Co., Saco, Me., accidentally shot and killed himself while gunning for partridges, Oct. 29. He was 45 years old, and the inventor of a motor which the company builds.

Eugene A. Rogers, vice president and general manager of the Rogers Rake Co., Pleasant Valley, Conn., died at his home in that town, Oct. 15, aged 68 years. He had been engaged in the business more than 30 years.

Louis A. Cook, for the past three years office manager of the Wells Bros. department of the Greenfield Tap & Die Corp., Greenfield, Mass., died at his home in that town, Oct. 17, aged 60 years. He suffered a shock while at work in his office several weeks ago.

George W. Sayles, who for the past seven years was representative in the Far East for the Universal Winding Co., Auburn, R. I., died in Tokio, Japan, Oct. 27, of brain fever. Before going to the company about 12 years ago he was connected with the Whitin Machine Co., Whitinsville, Mass.

Dr. Adrian H. Hoyt, owner of the Hoyt Electrical Instrument Works, Concord, N. H., died at his home in that city, Oct. 21, aged 59 years. He was an inventor of note, having perfected a device for measuring electrical current and a timing device for deap sea bombs which was used with success in fighting German submarines.

Brig. Gen. Horace L. Haldeman, aged 73, who retired last May as president of the Pulaski Iron Co., Pulaski, Va., and Philadelphia after an active career of nearly half a century in the pig iron producing industry, died Oct. 27 at his home in Marietta, Pa., from paralysis. Until recently he was secretary of the Virginia Pig Iron association, and in January, 1917, was elected president of the Eastern Pig Iron association. He long has been a prominent figure in eastern and Virginia pig iron circles and was a member of something like 18 technical, historical and patriotic organizations, including the American Foundrymen's association, the Philadelphia Foundrymen's association, the American Iron and Steel institute, the American Society for Testing Materials, the Franklin Institute of Philadelphia, and others.

Mr. Haldeman was born at Locust Grove, Lancaster county, Pa., in 1847. After being at the front in the early part of the Civil war although he was not quite 16 years old, under his father, who served as assistant adjutant general, he recruited more than a half company and was commissioned first lieutenant of the Twentieth regiment, Pennsylvania cavalry. When the war ended, he was mustered out as a captain. Following the war, Mr. Haldeman spent two years in the insurance business and then became connected with the passenger department of the Pennsylvania railroad. He then became identified in 1872 as a member of the firm of E Haldeman & Co. with the blast furnace industry established by his grandfather at Chickies, Pa. This company was succeeded by the Chickies Iron Co., and later by Haldeman, Grubb & Co. As managing partner of the latter company, Mr. Haldeman had three blast furnaces and nine iron ore mines under his personal management and supervision. In 1898 he disposed of his Chickies

HORACE L. HALDEMAN

interests and was elected vice president of the Pulaski Iron Co., Pulaski, Va., of which later he became president. Under his management, the Pulaski company adopted the expansion policy which led it to acquire extensive iron ore and coal holdings and to modernize its blast furnace equipment.

Mr. Haldeman long was associated with the national guard of Pennsylvania as commissary general and some time ago retired with the rank of brigadier general. He served as colonel on the staffs of four governors of Pennsylvania, was a member of the Pennsylvania state legislature and served a term as state senator from the Lancaster-Lebanon district.

Trade Trend Unchanged by Vote

Outcome of Election Probably Will Not Affect Immediate Trend Toward Deflation of Prices, Profits and Activity—Railroad Earnings Surprisingly Small —Imports Take Tumble in September—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE outcome of Tuesday's election is not expected to have any effect upon the immediate future of the business situation. The process of readjustment is being guided by deep-moving economic forces and there is little the new administration can do to check the deflationary tendencies, even if it were desirable to do so. The stock market, by refusing to indulge in a pre-election movement, indicated its belief that no change in the trend of business profits, prices or trade activity, would follow the result of the vote for president. This feeling also prevails generally in business circles.

Two developments of the last week, bearing upon the financial and industrial situation, contained distinct surprises. One was the report of foreign trade for September showing an excess of exports of $243,00,000 against $65,000,000 in August. The other was the reports of various railroad earnings for September disclosing smaller net returns than had been generally expected.

Railroad Earnings Small

The September railroad reports have been somewhat eagerly awaited because they constituted the first indication of the results of the increased freight and passenger rates. The fact that net earnings were not larger are accounted for by a number of considerations. In the first place some of the railroads had accumulated wage increases to pay to employes out of September returns. In addition it is said that September results do not reflect the full measure of benefit from the advanced rates, because much of the traffic moved when congestion began to be cleared away had been accepted by the roads before the new rates were effective. With increased efficiency in the handling of freight and in moving cars, the railroads may show better earnings under the new rates during the coming months. Offsetting this prospect, however, is the consideration of declining traffic, already reported by the roads, due to the contraction of manufacturing and trade activities.

The earnings of the railroads and the re-establishment of their credit on a firm footing are matters of supreme importance to the iron and steel industry. While estimates of vast expenditures by the roads, indulged in some months ago, have been completely revised, as the roads' efficiency improves with existing equipment, the fact remains that considerable buying will be necessary to maintain the progress of the systems.

In this connection it is well to remember that no particular rate of earnings is guaranteed the roads under the new transportation act. The interstate commerce commission was enjoined to fix such rates "that carriers as a whole or in the aggregate for each rate territory will under honest and efficient management earn an aggregate annual net railway operating income equal, as nearly as may be to a fair return upon the aggregate value of the railroad property of such carriers." Furthermore it was provided that the commission "shall take as such a fair sum return a sum equal to 5½ per cent of such aggregate value" and may add ½ per cent as a provision for improvement and additions. This definite percentage is provided for only two years, after which the commission may use its own discretion. The point of the whole law is that the commission on the basis of the aggregate valuation of road properties in any particular district may fix rates which it believes will enable the roads to earn the stated rate of return. Whether or not the individual road earns as much or more than the 6 per cent, depends upon the ability of its management. Some roads will earn more and some will earn less.

Trade Trend Changed

What caused the "favorable balance of trade" to fluctuate so sharply in September has been the subject of much conjecture. It is known that the change was due in the main of the decline of September imports to $363,000,000. This was a decrease of $150,000,000 from the August total and of $72,000,000 from September, 1919. Imports were smaller than for any month since December, 1919. Exports standing at $606,000,000 were $28,000,000 more than in August and a gain of $11,000,000 over September, 1919, when the total was $595,000,000. The unexpected development is believed to be in some way connected with the business reaction in this country. Imports have declined because of the American public's war on high prices, and the falling demand for luxuries. Shrinking prices for such commodities as sugar, coffee and other imports are also believed to have been reflected in the September figures. On the other hand heavy exports indicate the world's need for American goods and the necessity of buying, despite high prices and adverse exchange rates. Exports of breadstuffs in September totaled $114,000,000 against $87,000,000 one year before. The value of agricultural exports in September was $229,000,000 or 36 per cent of all exports. Buying of American food by foreign countries in September was only slightly less than in September, 1918, during the world war.

Bethlehem Bookings Drop, President Reports

Orders on the books of the Bethlehem Steel Corp., as of Sept. 30, according to a statement by President Eugene G. Grace, of that interest, following a meeting of the directors in New York, totaled $195,500,000, compared with $251,400,000 at the beginning of the year. The reduction in future business, he said, is accounted for almost entirely by the completion of work on ships for the United States navy and the Emergency Fleet Corp. Mr. Grace spoke optimistically as to the outlook for the steel business and said there is heavy buying of rails by the railroads. He said that this business is being taken on a basis whereby there would be a price agreement on the tonnage between now and the end of the year. Bethlehem's present price on open hearth rails is $57.

"The steel plants of the corporation," said Mr. Grace, "are operating at about 80 per cent of capacity, this representing a decrease of 10 per cent over September, due solely to the falling off in new business. The three major shipbuilding plants of the corporation have sufficient work on hand to insure full operations throughout the year 1921. The new drydock installation at the Fore River plant in Boston harbor, with adequate repair facilities, will

be completed by the first of the year. Additional docks are being constructed at both the Baltimore and San Francisco plants. It is believed by the management that these drydock and repair facilities, operating as a part of the shipbuilding plants in the three large shipping ports of Boston, Baltimore and San Francisco, will prove a valuable asset to this branch of the corporation's business.

"The general situation now existing is but a natural consequence of a long-sustained and abnormal demand on the capacity of the steel industry. By the adjustment of unnatural conditions, which is necessary and inevitable, and by accomplishing this in an orderly manner, as is being done, we shall arrive at a new basis for confidence and a constructive progress. The fact that during the last five years a very large percentage of the output of steel in the world has been diverted to war purposes has resulted in a tremendous shortage of commercial steel. To fill this shortage and to provide for the normal demands of trade will result in again taxing the productive capacity of the steel industry, once normal purchasing power is re-established."

Company Offers Workers $1,000,000 in Stock

An increase of $1,000,000 in the preferred stock of the American-La-France Fire Engine Co., Elmira, N. Y., has been authorized to permit employes to become stockholders. When the employes completed payments for Liberty bonds last spring a general desire was expressed to continue weekly saving, and as the stock of the company was rather closely held it was decided to authorize the increase. In announcing the plan to employes recently, J. R. Clarke, president and general manager stated:

"The plan not only provides for the purchase of the stock by easy payments, but in order to encourage savings and an interest in the company's welfare, the company offers to sell all employes complying with the plan as outlined in a special service compensation of $3 per annum for each share of stock subscribed for, for the period of the years from Oct. 1, 1920; this to be paid in addition to the regular dividends of $7 per annum, which, on the basis of the cash amount paid for the stock, namely $90 per share, will yield a net return of more than 11 per cent per annum for the period of five years. After the period of five years, on the basis of the price paid for the stock, the income will be about 8 per cent."

Westinghouse Bonds Sold

The investment public quickly absorbed an issue of $30,000,000 in Westinghouse Electric & Mfg. Co. 7 per cent gold bonds. The bonds mature in 10 years and were sold to yield 7¼ per cent to the investor. The proceeds for the sale will be used to pay notes payable. The issue is subject to the approval of stockholders upon a proposed increase in the company's indebtedness at a meeting to be held Nov. 18. It is said that sufficient assenting proxies have been obtained to assure the approval.

In connection with the loan, Guy E. Tripp, chairman of the board of the company, says:

"As of Sept. 30, 1920, the current assets of the company amounted to $128,630,880, while the current indebtedness consisting mainly of accounts payable not due, advance payments on contracts and accruals for interest. Federal and other taxes, after applying as of said date the proceeds of the sale of the bonds, amounted to $31,112,486. The only other indebtedness will be this issue of $30,000,000 bonds and $6,342,500, consisting almost entirely of Westinghouse Machine Co. First and Refunding Mortgage bonds, due 1940. The capital stock of the company, now paying 8 per cent dividends per annum, amounts to $74,812,650 par value, having a market value at present quotations in excess of $70,000,000."

May End Receivership

If stockholders will co-operate in carrying out plans for reorganization of the Standard Parts Co., Cleveland, the lifting of the receivership from the company is predicted by Dec. 1, in a statement issued by the creditors' committee. Although the audit of the company has not been completed it was stated that present indications are that the equity will exceed $12,000,000. This is more favorable than was estimated some weeks ago when estimates were made that the equity would not be more than $10,000,000.

The creditors committee has approved the plan for reorganization of the company, which provides for the raising of at least $6,000,000 through the sale of stock and securing credit from the banks to the extent of $4,000,000. It is also provided in the plan that payment of all claims under $200 shall be made in full by Dec. 15 and a settlement of all claims in excess of $200 shall be made on the basis of 40 per cent cash on or before Dec. 15, and delivery by the Standard Parts Co. of its notes for the balance of each claim payable in three equal installments in four, eight and 12 months Dec. 15 and bearing 8 per cent interest.

Increases Directorate

At a special meeting Saturday the William B. Pollock Co., Youngstown, O. increased the board of directors from five to eight members and filled the vacancy caused by the death of Charles W. McClure. The board now includes Porter Pollock, W. G. Wilson, John Kirby, John H. Warner, Gilbert M. Tinney, Alexander Best, Harry Payne and Edgar J. Reilly, the last four being the new members. The directors elected these officers: William G. Wilson, president and treasurer; John H. Warner, vice president and general manager; John Kirby, vice president and general superintendent; Alexander Best, secretary. Harry Payne was appointed director in charge of estimates; Edgar J. Reilly, in charge of sales; James T. Gilboy, purchasing agent.

General Electric Co. May Sell Employes Stock

The General Electric Co. recently called a special meeting of stockholders to vote on a proposition to authorize the sale of not more than 50,000 shares of stock to employes. C. A. Coffin, chairman of the board of the company, in issuing the call for the special meeting, said:

"Acquisition of such stock by employes in a large way is not practicable except through some plan permitting the purchase upon installment payments. Until recently it has not been possible for the company to adopt such a plan for the reason that stock was not available for this purpose. But under the New York stock corporation law as amended in 1919 a corporation now may with the consent of the stockholders sell stock to its employes.

"It is proposed that the subscription price shall be substantially the market price at the time the offer is made, payment for the shares to be made by periodical deductions from payroll."

The General Electric Co. has purchased an interest in the Locke Insulator Corp. In order to bring about full co-operation between the two companies with respect to engineering and research work, effecting insulator problems. The Locke company is to produce high tension transmission insulators of the Hawlett type at its newly completed plant at Baltimore.

Buys Chicago Plant

The Grabler Mfg. Co., Cleveland, manufacturer of steel specialties, recently completed the purchase of the former plant of the Winslow Bros. Co., at 4600 West Harrison street, Chicago. The plant has been in use by the Grabler company since the first of the year as a malleable foundry. The deal was made through the transfer of title to the property by M. C. Rosenfeld to the new owner. Mr. Rosenfeld is a large stockholder in the Grabler company.

The Weeden Mfg. Co., New Bedford, Mass., maker of mechanical toys, has purchased the factory of the New Bedford Shuttle Co., and will make alterations for occupancy. The former owner is contemplating the erection of a new brick, 3-story factory.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN W. DOUGHERTY has resigned as vice president of the Crucible Steel Co. of America and as president of the Pittsburgh Crucible Steel Co., and has been elected president of Marquette Iron Co., New York. Mr. Dougherty has recently acquired a substantial interest in the latter company. Following his graduation as mining and metallurgical engineer from Lehigh university he was connected for 22 years with the Pennsylvania Steel Co., becoming general superintendent of the Steel works. When he gave up this position in 1911 the plant consisted of five blast furnaces, 19 open hearths, three bessemer converters, rolling mills and by-product coke ovens, employing 9000 men. He resigned to join the Pittsburgh Crucible Steel Co. At that time the Midland plant had a capacity of 350 tons daily from one blast furnace. He increased it to two blast furnaces of 1150 tons capacity, 12 90-ton open-hearth furnaces, four rolling mills and a large modern by-product coke plant of 100 Kopper's ovens, with a capacity of 1200 tons daily. Subsidiary to Marquette Iron Co. is the Marquette Ore Co., owning properties in the Marquette range and conducting the parent company's mining operations. In addition it owns the lease on the Maroco mine in Minnesota, now being stripped and equipped with a washing plant. C. B. Dunster, Cleveland, is general manager of the Marquette Ore Co., which will succeed E. N. Breitung & Co. in the sale of iron ore. Breitung & Co., Inc., 9 Hanover street, New York, was organized a few weeks ago, and John W. Peddie resigned as vice president of the Garfield National bank, New York, to become president of the company. Mr. Dougherty becomes a director of Breitung & Co., Inc.

C. L. Gillespie recently was elected president of the Texas Carnegie Steel Corp., Galveston, Tex., to succeed C. N. Markle, resigned.

George E. Quigley, 322 Ford building, has been appointed Detroit representative of the Wickwire-Spencer Steel Corp.

O. W. Mason, assistant manager for Hickman, Williams & Co., New York, has returned from a trip to Europe.

Henry Beland has engaged in business under the name of the U. S. Screw Co., 26 Baker street, Worcester, Mass.

W. L. Goodrich of Springfield, Mass., has been appointed to represent the N. & G. Taylor Co. Inc., Philadelphia, in the sale of its forging steel.

Theodore J. Schaub, formerly assistant general sales agent of the Crucible

JOHN W. DOUGHERTY

Steel Co. of America, has been appointed sales manager of the Union Electric Steel Co. Carnegie, Pa.

G. Cook Kimball, chief engineer of the American Sheet & Tin Plate Co., Pittsburgh, has been elected vice president of the Harvard Alumni association for the coming year.

George W. Way has resigned as manager of sales of the Cromwell Steel Co., Lorain, O., and Cleveland, to accept a position with the National Sales & Trading Co., Cleveland.

J. D. Corcoran, who formerly was works manager of the Hydraulic Pressed Steel Co., Cleveland, recently was elected president of the Sharon Pressed Steel Co., Sharon, Pa., to succeed Josiah Kirby.

Alexander Johnson, for many years deputy minister of marine at Ottawa, Ont., has left the service of the Canadian government to become general assistant to the president of the British Empire Steel Corp. He formerly represented Cape Breton in the Canadian parliament.

John T. Higgens has resigned as night superintendent of the Haselton mills of the Sharon Steel Hoop Co. to accept a similar position at the Western Reserve plant of the Brier Hill Steel Co.

Robert B. Hitchcock now is chief chemist of the Woodward Iron & Steel Co., Woodward, Ala. He recently resigned similar duties with the Youngstown Sheet & Tube Co., Youngstown, O.

Frank C. Davies, formerly foreman of the coke plant of the Youngstown Sheet & Tube Co., Youngstown, O., now is assistant superintendent of blast furnaces of the Donner Steel Co., Buffalo.

D. J. Growley has been made Michigan sales agent with offices in the Dime Bank building, Detroit, for the Tacony Steel Co., Philadelphia.

Eugene C. Heacox has been appointed manager of the Unionville, Conn., branch of the Bourne-Fuller Co., Cleveland, to succeed W. A. Hitchcock, resigned. He has been connected with the branch for many years.

Robert W. Early, who for the past 12 years has been connected with the claim department of the American Sheet & Tin Plate Co., has been placed in charge as resident manager of the new branch office, recently established at 628 Jenkins building, Pittsburgh, by Fairbanks & Co., Wade building, Cleveland, sellers of iron ore, pig iron, steel, coal and coke.

H. H. Cosley, for 15 years with the Chicago sales office of the Cambria Steel Co., and previous to that for five years with the Illinois Steel Co., has severed his connection and has taken a position as contracting engineer for the Decatur Bridge Co., Decatur, Ill. He has opened offices at 1509 Westminster building, Chicago. On his retirement from the service of the Cambria Steel Co. his office associates presented him a handsome testimonial of esteem.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

A W. BURREN, who has been associated with the Western Electric Co., New York, Antwerp, London, Buenos Aires, South America and in Spain, and who has spent the last two years traveling through Brazil to familiarize himself with the electrical requirements of that territory, has been placed in charge as manager of the branch established at 91 Rua Dos Ourives, Rio de Janeiro, Brazil, by the International Western Electric Co. Mr. Burren will be assisted by A. S Santos, sales engineer, who has been in the New York office of the company for some time preparing for his new duties.

James Dean of William A. Read & Co., Boston, has been elected a director of the Greenfield Tap & Die Corp., Greenfield, Mass.

William F. Bartholomew of Tucker, Bartholomew & Co., Boston, has been elected a director of the Hendee Mfg. Co., Springfield, Mass.

W. D. McNeill has been appointed manager of the southwestern sales offices in Dallas, Tex., of the United States Cotton Machinery Co., Fall River, Mass.

Edward R. Davenport, for the past 15 years sales manager of the Narragansett Electric Lighting Co., Providence, R. I., has resigned to represent Bodell & Co., in Dayton, O.

W. H. Woodin, who is president of the American Car & Foundry Co., New York, recently was elected a member of the executive committee of the American Locomotive Co.

A. H. Decatur of the Decatur & Hopkins Co., Boston, was elected president of the National Hardware association at its convention recently held at Atlantic City.

Roy Davey has again resigned as general sales manager of the Bethlehem Motors Corp., Bethlehem, Pa. He returned to his former position at the request of the receiver.

Clarence C. Brinley now is manager of the trolley carrier department of the Conveyors Corp. of America, Chicago, with headquarters at 110 West Fortieth street, New York.

R. A. B. Goodman has been appointed manager of the Canadian-Detroit Twist Drill Co., Walkerville, Ont., recently established by the Detroit Twist Drill Co., Detroit, to take care of its Canadian business.

Thomas S. Green, manager of the Compagnie des Meules Norton, La Courneuve, near Paris, owned by the Norton Co., Worcester Mass., will sail Oct. 28, to take up his permanent residence in Paris.

David Hays, formerly of the Schenectady, N. Y., plant of the General Electric Co., has recently been made superintendent of the wiring supplies division at the Bridgeport, Conn., plant of this company.

L. C. Crewe, president and general manager of the La Follette Coal & Iron Co., La Follette, Tenn., has been promoted from vice president and general manager to the office of president and general manager.

Charles S. Dahlquist has been appointed director of engineering of the Eaton Axle Co., division of the Standard Parts Co., Cleveland, resigning as chief engineer of the Timken-Detroit Axle Co., Detroit.

H. M. Houston, who recently resigned from Houston, Standwood & Gamble Co., Cincinnati, now is affiliated with William K. Stamets, Jenkins arcade, Pittsburgh, machine tool dealer, in an executive capacity.

Walter H. Wood has resumed his duties as assistant treasurer of the Gilbert & Barker Mfg. Co., West Springfield, Mass., after a year's absence on account of ill health. He recuperated in Florida and Maine.

F. Rodger Imhoff has been appointed sales manager of the Precision & Thread Grinder Mfg. Co., Philadelphia. He has been located in Detroit as field engineer for this company.

Herbert Higginbottom Jr. now is assistant engineer in the Detroit office of the Arthur Knapp Engineering Corp. He formerly was gage and tool engineer for the Packard Motor Car Co., Detroit.

M. J. Stack, formerly in the production and sales department of the Mesta Machine Co., Pittsburgh, has recently affiliated himself with E. C. Humphreys & Co., Chicago, as Pittsburgh sales representative.

Merwin Armstrong, of Memphis, Tenn., and T. S. Shaffer, of Chicago, have been added to the engineering force to aid in the productive development of the John F. Byers Machine Co., Ravenna, O.

R. C. Brower, formerly branch manager in Detroit of the Bearings Service Co., previous to which time he was with the Hyatt Roller Bearing Co., has been appointed branch manager of the Boston office of the Bearings Service Co.

S. N. Peterson has resigned as purchasing agent of the S. K. F. Ball Bearing Co., Hartford, Conn., to assume similar duties with the S. K. F. Industries, Inc., with headquarters in New York City. He had been with the Hartford company since 1916.

Dewitt Page has been re-elected president and general manager of the New Departure Mfg. Co., Bristol, Conn. Other officers are: Vice president, Frank P. Furlong; secretary, Arthur C. Hitchcock; and treasurer, William E. Wightman.

H. E. Beckman, formerly of Chicago, has been placed in charge of the office and warehouse, established at Blanchard and Ferry streets, Newark, N. J., by the S. Obermayer Co., Cincinnati, Chicago and Pittsburgh, manufacturer of foundry supplies.

Harry G. Stoddard, vice president and general manager of the Wyman-Gordon Co., Worcester, Mass., who has been seriously ill with pneumonia for several weeks, is at Virgania Hot Springs where he will remain until he completely recovers his strength.

G. E. Anderson, formerly assistant eastern sales manager of the Duff Mfg. Co., Pittsburgh, has been promated to the position of southwestern sales manager, and placed in charge of its new brance office located in the Railway Exchange building, St. Louis.

V. Z. Caracristi, formerly consulting engineer of the Pulverized Fuel Equipment Corp., formerly at 30 Church street, New York, now is identified with the Combustion Engineering Corp., 11 Broadway, that city, which has acquired control of the Pulverized corporation.

Exports Decline in September

Imports Also Drop, After Record Tonnage for Both in August—Structural Shapes, Plates and Scrap Lead All Products in Volume of Outgoing Shipments—Rails and Manganese Ore Largest Incoming Tonnage

SEPTEMBER'S exports of iron and steel products, while 45,000 tons over the corresponding month of last year, dropped to 408,605 tons from the August total of 431,519 tons. This reflects, to some extent, the slump in export buying in this country. The September tonnage undoubtedly was made up largely of materials covered by contracts placed some time ago.

The most remarkable showing of any of the steel products in September was in structural shapes. The exported tonnage of this material was 60,135. The size of this business may be better determined when it is recalled the August tonnage, 36,603, brought up the average for the first eight months of the year to 34,162 tons and that last year September's volume was only 21,933 tons.

Steel plates also made a remarkable showing in September. The exportation of 75,607 tons was approximately 10,000 tons more than was sent out in August and it topped the eight months' average of 70,029 tons by more than 5000 tons. Exports in plates in the corresponding month of last year reached 52,852 tons. For the nine months this year plates have contributed 635,845 tons to the export total.

Scrap iron and steel also made a striking showing, with 44,660 tons in September, which sent the year's total to 166,585 tons, greater than the difference between all the exports in the nine months' periods of this year and last. In August scrap exports were 37,573 tons. This and the September total compare with an eight months' average of 15,199 tons.

Imports in September were only 31,825 tons. In August, the total was 58,335 tons, while in September last year the total was 37,492 tons. However, despite the September showing, the volume of iron and steel imports, for the year to date has a comfortable margin over the first nine months of 1919, reaching 347,415 on Sept. 30 as compared with 197,940 at the same time last year. The heaviest gain in imports in September was in rails, 6563 tons this year comparing with 27 in September, 1919. In August the total was 8549 tons. Scrap imports fell from 25,030 tons last year and from 24,714 tons in August this year to 9486 tons.

Imports of various ores and ferroalloys reached 98,173 tons in September after 113,844 tons in August and 24,803 tons in September, 1919. Manganese ore, as usual, was responsible for the bulk of this tonnage, constituting 88,422 tons of the total. In August the comparative figure was 99,601 tons while in September last year it was 19,601 tons.

IMPORTS AND EXPORTS
(Gross Tons)

	1920		1919	
	Imports	Exports	Imports	Exports
January	45,795	333,677	16,932	370,876
February	36,491	308,128	11,819	340,623
March	38,377	426,448	17,750	367,314
April	29,681	395,583	16,561	402,653
May	29,125	419,064	18,636	414,029
June	40,549	392,780	21,761	562,954
July	32,742	419,230	28,258	287,685
August	38,825	451,519	28,990	396,112
September	31,825	408,605	37,492	363,618
October			40,698	302,459
November			43,826	336,994
December			39,806	254,780
Total	342,920	3,535,034	322,529	4,400,101

	1918		1917	
	Imports	Exports	Imports	Exports
January	12,475	490,259	40,910	608,281
February	12,940	432,465	24,947	449,099
March	14,312	380,062	37,943	606,558
April	11,247	463,035	48,561	517,783
May	14,387	488,515	26,479	582,303
June	13,913	418,178	29,080	629,305
July	11,789	457,118	28,850	346,393
August	12,862	511,782	26,129	503,075
September	9,013	473,126	19,058	499,067
October	15,552	426,458	14,310	571,868
November	11,329	439,268	15,559	497,977
December	28,445	357,753	14,643	653,344
Total	168,264	5,338,019	326,477	6,465,053

IRON AND STEEL EXPORTS
(Gross tons)

	—September—		9 months ending September	
	1920	1919	1920	1919
Pig iron	22,724	18,991	175,604	271,112
Scrap	44,660	2,775	166,585	14,679
Steel billets, ingots and blooms	18,113	37,513	194,563	202,962
Wire rods	6,838	6,512	97,403	93,817
Steel rails	31,170	58,424	421,133	520,228
Steel bars	41,544	50,681	459,149	432,060
Iron bars	4,847	3,773	53,092	39,724
Struc. iron and steel	60,135	21,933	333,433	295,597
Hoops, bands and scroll	3,920	2,409	38,437	42,430
Gal. sheets and plates	6,212	9,196	80,261	80,532
Iron sheets and plates	1,921	6,332	21,362	33,514
Steel plates	75,607	52,852	635,845	557,874
Steel sheets	13,337	13,379	118,296	142,301
Ship and tank plates, punched and shaped	3,458	1,042	32,143	10,077
Tin and terne plates	13,253	16,836	169,732	158,263
Barbed wire	6,464	9,514	86,610	70,912
All other wire	16,829	16,921	126,628	153,974
Cut nails	361	221	2,125	2,553
Wire nails	7,826	7,545	61,970	46,447
All other nails incl. tacks	750	899	7,941	13,863
Pipes and fittings	24,319	19,970	236,959	220,401
R. R. spikes	837	1,919	11,835	21,509
Bolts, nuts, rivets	2,844	2,787	27,897	32,650
Horseshoes	291	108	1,413	2,901
Cast radiators	365	1,087	5,323	3,494
Total	408,605	363,618	3,565,739	3,463,877

IRON AND STEEL IMPORTS
(Gross tons)

	—September—		9 months ending September	
	1920	1919	1920	1919
Pig iron	13,764	11,515	153,812	47,624
Scrap	9,486	25,030	119,872	126,360
Bar iron	382	205	4,048	1,248
Ingots, blooms and billets	595	608	21,571	6,283
Structural shapes	90	35	1,114	743
Rails	6,563	27	42,064	14,636
Sheets and plates	145	23	1,321	717
Tin and terne plate	9	18	230	149
Wire rods	791	31	3,333	150
Total	31,825	37,492	347,415	197,940

IMPORTS VARIOUS ORES AND FERROALLOYS
(Gross tons)

	—September—		9 months ending September	
	1920	1919	1920	1919
Ferromanganese	6,524	1,655	40,039	18,649
Ferrosilicon	1,159	1,015	11,643	5,634
Manganese ore	88,422	19,601	423,012	269,411
Tungsten-bearing ore	360	818	1,372	5,843
Nickel ore	1,708	1,714	25,233	16,136
Total	98,173	24,803	501,299	315,673

IRON ORE IMPORTS
(Gross tons)

	—September—		9 months ending September	
	1920	1919	1920	1919
From—				
Spain	...	*6,323	44,421	61,260
Sweden	...	6,768	2,812	5,591
Canada	2,508	851	29,076	10,227
Cuba	45,183	34,536	675,458	175,408
Other countries	25,675	48,478	870,678	303,188
Total	73,366	96,956	1,640,445	705,674

EXPORTS PIG IRON AND SEMIFINISHED
(Gross Tons)

	1920		1919	
	Pig iron	Semi-finished material	Pig iron	Semi-finished material
January	18,468	19,937	36,757	11,594
February	15,689	22,693	20,925	9,900
March	22,815	30,444	22,158	8,176
April	14,608	19,032	17,038	11,488
May	13,092	16,370	37,087	20,771
June	17,105	29,811	39,785	46,016
July	29,647	17,243	42,327	21,318
August	22,645	20,930	36,071	36,162
September	22,724	18,113	18,991	37,513
October			14,108	20,713
November			21,429	13,211
December			14,612	21,538
Total	176,713	194,563	321,261	258,400

	1918		1917	
	Pig iron	Semi-finished material	Pig iron	Semi-finished material
January	20,581	195,385	69,146	183,650
February	10,711	166,807	49,018	131,586
March	9,849	144,443	69,629	193,469
April	11,282	177,128	44,783	160,965
May	22,567	159,299	61,112	168,158
June	22,896	139,377	83,406	190,907
July	20,265	139,612	32,305	106,085
August	26,028	189,851	62,083	170,503
September	34,494	135,450	44,287	148,932
October	35,452	125,023	47,115	209,667
November	30,825	140,924	25,763	150,120
December	24,625	63,890	67,593	203,085
Total	269,575	1,786,189	656,240	2,017,113

October Tool Buyers Cautious

Remain Out of Market Expecting Lower Prices, Which So Far Have Not Developed—Few Automotive Inquiries Reported; More Suspensions—Railroad Business Remains Undeveloped—Crane Trade Comparatively Dull

CAUTION and conservatism consistently was maintained by machine tool and equipment buyers throughout October. This attitude was inspired either by a feeling that prices are due to decline or by an avowed purpose on the part of users to force them down. For the most part, purchases were confined to actual needs for filling in purposes, or for tool room requirements, buying of production equipment being reduced to a minimum, particularly in the East. Offsetting this attitude on the price question by prospective buyers, the manufacturers have endeavored to give wide circulation to their stated inability to reduce and backed that up with guarantees against price declines during a period of from three to nine months. This failed to bring out much business, however. A few minor reductions were counterbalanced by two or three advances in price during the month. In some cases manufacturers were able to make improved deliveries, because of the numerous cancellations and suspensions.

Cancellations and Suspensions Continued in Automotive Trade

AUTOMOTIVE and allied industries were hard hit by the slump in the general financial and industrial situation in October. The majority of the cancellations and suspensions of machinery on order originated in that field. One of the largest cancellations reported last month was made by the General Motors Corp., of $250,000 worth of lathes. The Willys Corp., Elizabeth, N. J., was one of the larger eastern automobile concerns to hold up its orders, although it is proceeding with its building operations. Confidence, therefore, is expressed that this and many others will be reinstated. The Ford Motor Co., Detroit, sought 15 automatics in Cleveland. The General Electric Co., issued additional inquiries for Schenectady, N. Y., and will buy subsequent to Jan. 1, 1921. That company made sizable purchases for West Lynn, Mass. The Sprague Electric Co., Bloomfield, N. J., made some minor purchases. A Detroit automobile manufacturer asked for prices on a number of presses.

Miscellaneous Inquiries Fairly Numerous; Orders Few

MISCELLANEOUS industries were fairly well represented in the general run of inquiry during October, although orders were fewer than in the preceding month. Press and hammer business continues in fair volume. Hammers were asked for by the Union Tool Co., Carnegie, Pa. Four presses were purchased by the American Welding & Mfg. Co., Warren, O., and quotations were asked on some other equipment. The Schiffmacher-Fillinger Co., and the Crosby Co., Buffalo, entered the market for several presses as did the Hydraulic Steelcraft Co., Cleveland. Lathes were asked for in varying quantities by the Dohler Die Castings Co., Toledo, O.; the Simmons Mfg. Co., Cleveland, and William J. Koehler, Giddings road, that city; the Cask-Dupree Mfg. Co., Marietta, O.; the Universal Clay Products Co., Sandusky, O.; but the largest order reported was placed by the Western Electric Co., Chicago, for 30 lathes. The Wickman Screw Works, Pittsburg, wanted several turret lathes; the Superior Screw & Bolt Co., Cleveland, asked for several nut castellating machines together with tool room equipment; the Eagle Nut & Forging Co., Cleveland, asked for three fair sized machines. The Reading Steel Casting Co., Reading, Pa., put out a fair sized list and the Barber Asphalt Paving Co., asked for about $50,000 worth of machines for Perth Amboy, N. J., but did not close. The Air Reduction Co., New York, issued a list of 10 or 12 machines and the Westinghouse Lamp Works, bought $40,000 worth.

Railroads Expected to Furnish Interesting Business

SLOW of development, the railroad business which has been coming before machinery sellers for many weeks back, still is looked upon as containing much of interest for the winter months, although no real action is anticipated until after the first of the year. However, the Santa Fe made several purchases at Chicago and the Pere Marquette is reported to have closed on $100,000 worth for three Michigan planta. The Missouri, Kansas & Texas purchased six lathes as did the Illinois Central. The latter road, however, is understood to have revised its larger inquiry. The Lackawanna and the New York Central made minor purchases. The Pennsylvania put out a small inquiry in Pittsburgh which it later withdrew.

Export Trade Dull With Few Inquiries Reported

DULLNESS in the domestic machinery trade likewise reflected in the October export business. A few fair sized inquiries, however, were reported including one from the municipality of Japan for 35 metalworking tools. The navy department of Japan, likewise asked for 12 milling machines and five lathes. The Tata Iron & Steel Co., India, bought $55,000 worth of wiremaking machinery and an order was placed in New York for $40,000 worth of equipment to go to Australia. Substantial inquiries were received from China, but no buying was reported. Perin & Marshall, New York, asked for considerable foundry and machine shop equipment for China. South America continues to send inquiries and four lists from railroads are said to involve the expenditure of from $250,000 to $1,000,000 each.

Crane Inquiries Are Few in Number

EXPORT inquiries reported covered some cranes as well. The Japanese navy yard asked for a special shipbuilding crane and issued a list of 10 electric overhead cranes of from 10 to 60-ton capacity. The Imperial Japanese Steel Works, asked for an 80-ton electric. Frazer & Co., New York, inquired for a 200-ton and a 30-ton crane for shipment to Japan. Van Gelde Sons, Amsterdam, Holland, had a representative in New York, seeking cranes. Dock projects in the East will require many cranes, it is stated. The Panamerican Terminal & Dock Corp., New York, will order 34 gantry cranes for a New York harbor project; 14 piers in Manhattan, N. Y., will require eight cranes each and a similar number will be needed at Stapleton, Staten Island, N. Y. The Griffin Wheel Co., Council Bluffs, Iowa, bought nine cranes of the overhead electric type, while the Eastern Tanners Glue Co., Dowanda, N. Y., bought three of the grab bucket type. The Bessemer Gas Engine Co., Grove City, Pa., closed on three cranes and one hoist. The Lunkenheimer Co., Cincinnati, asked for five cranes.

Tool Market Deadlock Continues

Users Await Price Reductions – One Decline of 20 Per Cent on Lathes Reported—General Electric Buys Lathes and Issues Another Lathe List—Single Tools Asked for in Cleveland—Crane Demand Low

WITH machine tool buyers still awaiting price reductions, the machinery market continues deadlocked and without feature. A few slight advances and one reduction of 20 per cent on lathes are reported, but various sellers state that prospective buyers will wait vainly for further declines. Some dealers believe that regardless of the outcome of the election, the present lull will continue until early next year or possibly until early next spring.

New England reports most of the machine tool activity of the week, Pittsburgh states that no ordering of any size whatever was done. The General Electric Co., Lynn, Mass., not only has purchased lathes but has issued another inquiry for 10. The Two Parts Rim Mfg. Co. purchased lathes and milling machines but all of its needs have not been entirely supplied. Other auto parts companies also have made purchases. Small inquiries are being made in better volume in the New York market but in that district as well as in other territories, many inquiries are made for the purpose of testing the market or on the part of railroads for getting a line on future appropriations. No indication, however, is given in any district as to the approximate date when railroad business will be placed. Stocks in machinery warehouses in Cleveland are not being reduced very rapidly and most dealers there are in good position to fill orders, which are slow in coming through. They continue to have difficulty making collections from companies which ordinarily discount their bills. Several single tool inquiries are reported in the Cleveland market. An interesting item in the Chicago market is the closing out of much equipment by the Moline Plow Co., which is going out of the tractor industry.

Some locomotive crane inquiries are current in Chicago and in New York and a few for electric cranes are put out in Cleveland, including one by the McKinney Steel Co. The Standard Oil Co. purchased two 15-ton locomotive and one 5-ton handpower cranes for Bayway, N. J. The Pacific Fruit Express Co., Ogden, Utah, closed on three 1-ton cranes and Thos. E. Murray, Inc., New York, is reported to have closed on two cranes of the grab bucket type. The Peters Motor Car Corp., Trenton, N. J., is expected to purchase many hoists, cranes, etc. The General Commercial Co. and R. W. Cameron & Co., New York, each inquired for cranes. Perin & Marshall ordered one for shipment to India. Other crane purchasers are the Bone Dry Lime Co., and the Eastman Kodak Co., while the American Car & Foundry Co. withdrew its inquiry for a 10-ton crane for Chicago and probably will buy a 5-ton.

Small Tool Inquiries Only Appear in the East

NEW YORK, Nov. 1.—The deadlock between buyers and sellers of machine tools remains, prices and general market conditions standing in the way of sizable buying. During the past week no orders or inquiries of consequence have been reported. Small inquiries are noted in better volume, but many of these appear to be made more for the purpose of testing out the market. So far, interests issuing these inquiries have received little encouragement, prices over the past three or four weeks remaining fairly steady. The situation, in brief, has long since resolved itself into one of waiting, with few interests looking for much trading.

Locomotive crane orders include a 15-ton Brown-Hoist crane for the Bone Dry Lime Co., Jamestown, N. Y., and a 20-ton crane for Perin & Marshall, 2 Rector street, New York, for shipment to India, and two 15-ton locomotive cranes for the Standard Oil Co., Bayway, N. J. Both these latter orders were placed with the Industrial Works, Chicago. The Standard Oil Co. has also recently awarded a 5-ton handpower crane for its Bayway plant.

The Southern railroad, with headquarters in Washington, has purchased a 2-ton gantry crane, with 50-foot span, from the Whiting Foundry Equipment Co., Harvey, Ill. The Pacific Fruit Express Co., Ogden, Utah, has purchased three 1-ton cranes, with 31-foot span, from the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. The Eastman Kodak Co., Rochester, N. Y., also has purchased a crane from, according to reports, the Shepard company, a 15-ton crane, 30-foot span was inquired for.

The General Commercial Co., 295 Broadway, New York, is inquiring for a 10-ton electric crane, with 70-foot span for installation in Ohio. R. W. Cameron & Co., 23 South William street, New York, is asking bids on a Luff crane for export. The American Car & Foundry Co. has withdrawn its inquiry for a 10-ton electric crane and will purchase only at this time a 5-ton electric crane with 50-foot span for Chicago. The 10-ton crane may be purchased later. Thomas E. Murray, Inc., Duane street, New York, is reported to have placed two 2½-yard grab bucket cranes from an Ohio builder.

The Peters Motor Car Corp., Trenton, N. J., which recently has taken over a plant for the assembling of 2-cylinder runabouts, will likely be in the market shortly for hoists and other equipment. The company's offices are at 208 Commonwealth building, Trenton.

Increased Activity Noted at Boston

BOSTON, Nov. 1.—As October drew to a close, machine tool dealers looked back over the sales record with little cheer for the books show a smaller total in

SEMINOLE

UNBREAKABLE

HEAVY DUTY CHISEL STEEL

This is the steel that is baffling science. File hard yet readily bent, not once but many times.

Its wide hardening range is a point of unusual merit.

Seminole will withstand any usage to which it may be subjected in actual service.

Seminole will reduce your chipping costs for you.

PROOF:

Write for the Ludlum Steel text book. Yours for the asking.

Invented and made by

Ludlum Steel Co.

General Offices and Works

Watervliet, N. Y.

"Masters of the Industry"

BRANCH OFFICES:

Cincinnati	Cambridge, Mass.
Pittsburgh	Detroit
Buffalo	San Francisco
Cleveland	Chicago
Philadelphia	New York

EST. LUDLUM 1854

the case of most interests than for any similar time during the year. The last few days of the month however brought a somewhat surprising increase in activity and hopefulness for a good month in November is expressed in all localities. During the past week the General Electric Co., Lynn, Mass., bought four lathes and on Oct. 23 brought out a new list covering 10 additional 14 and 16-inch lathes.

Automobile parts manufacturers are coming to life again and several have been in the market for small groups of machine tools. Two such firms in Worcester and one other Worcester manufacturer were all in the market during the week each placing an order for several tools. The Two-Parts Rim Mfg. Co., Worcester, bought lathes and milling machines, and is understood to be still in the market. One Boston machine tool dealer reports the last few days as showing the best aggregate sales of any similar period in many weeks. Some dealers, however, have not felt this impetus in the market and do not expect much business until the election interest has subsided.

The situation with machine tool manufacturers remains about the same. Those engaged on old orders running into the new year are continuing to operate at full production. Some, however, in the face of rapidly decreasing order books have greatly curtailed production or temporarily closed down. Bids close Nov. 3 for a locomotive crane for the government docks at South Boston.

Pittsburgh Market Remains Dull With No Buyers

PITTSBURGH, Nov. 2.—The market for machine tools in this district remains unchanged, being extremely dull. It is claimed that not one single order of importance has been placed during the past week. While some railroad and steel companies recently asked for estimates for 1921 requirements, but have provided no appropriations for them, there is no indication as to when an active buying movement may set in and it is evident that there is no specific information to show when it will occur. Some makers think that consumers may come into the market soon after the first of the year, while others doubt that they will do so before spring. There is no longer any belief that the market has been waiting for the presidential election but that its dullness now is largely due to the general readjustment and declining tendency of prices which buyers are hoping will affect machine tools.

Cleveland Sellers Report Continued Dullness

CLEVELAND, Nov. 2.—Sales of a lathe here, a grinder there and a drilling machine somewhere else alone are reported in this district, where users continue to wait for prices to drop. Some dealers claim they will continue to wait in vain, as long as labor and material costs continue high. A few minor advances are reported, including a slight advance by the Wilmarth & Morman Co., Grand Rapids, Mich., on drill grinders. On shapers for delivery subsequent to Feb. 1, 1921, the Columbia Machine Tool Co., Hamilton, O., has advanced its prices 10 per cent. Orders booked for delivery up to that time, will be billed at present prices. In an effort to stimulate purchases, however, one Ohio machine tool manufacturer has lowered his prices on lathes and accessories by 20 per cent, stating that to be the largest possible cut at present and all that will be made unless material and labor costs are reduced. This is the only reduction of size noted since the cut of 15 per cent on grinders by the Churchill-Morgan-Crittsinger, Inc., Worcester, Mass., announced about a month ago.

Financial difficulties continue to beset the path of automotive interests, the latest to have trouble being the Templar Motors Co., Cleveland, and the Jones Gear Co., that city. The Chandler Motor Car Co., Cleveland, is understood to be operating about 20 per cent, and machine tool dealers still are experiencing difficulty in collecting bills from large concerns in Cleveland and in Youngstown, O., which formerly discounted their bills.

The Automobile Machine Co., Cleveland, which was formed by Chandler Motor Car Co., and Cleveland Automobile Co. interests, to make parts, and which acquired the plant of the Merit Machine Co., is being watched with interest. While upwards of $200,000 worth of ma-

Mexico Offers Large Field for American-built Machinery

AN UNUSUAL opportunity is now open to American farm implement and machinery dealers to do business on an extensive scale with the Mexican government. According to official announcement by the department of agriculture of the government, an appropriation of $200,000 has just been made for the purchase of farm equipment to be retailed to Mexican farmers at cost pprice, and an additional appropriation of $400,000 is to be made for similar purpose as soon as the original appropriation is exhausted.

In arriving at this policy of aiding the farmers, the government has met with the opposition of agricultural implement machinery dealers throughout Mexico. Representation was made by these business men that their trade would be greatly curtailed by the adoption of the proposed policy. In meeting these objections the authorities took the position that the introduction of modern farm equipment upon the plantations of the country would stimulate the trade of private dealers and that in the end such action would prove of financial benefit to all interests concerned.

In this connection it is interesting to note that Germany is making a strong effort to regain the hardware and machinery trade of Mexico which that country held in prewar days. Practically all of the wholesale and retail hardware and machinery dealers in Mexico are Germans. In Tampico and a few other cities there are American dealers. During the war most of the German firms were barred by manufacturers of the United States, but with the removal of this ban they have started in to build up the business which fell off to a marked degree during the war. Through necessity, the German firms have been buying more or less farm machinery and implements in the United States, but there is every indication that they will resume their old trade relations with Germany as rapidly as their demands can be supplied. England also is making a strong bid for Mexican trade, particularly in the matter of certain kind of farm implements.

The administration of President Adolfo de la Huerta is committed to the policy of aiding the farmers of the country. He has expressed himself as believing that their greatest need is improved equipment for growing and harvesting crops and it is the announced purpose of the government to supply this need, to some extent at least.

IT'S THE FINISH THAT COUNTS

Say, Fellas:

You know it isn't so much the start as the finish that counts. That's the reason I'm so strong for them Hubbard Rolls—it's the finish. You can put your O. K. down on them to finish strong.

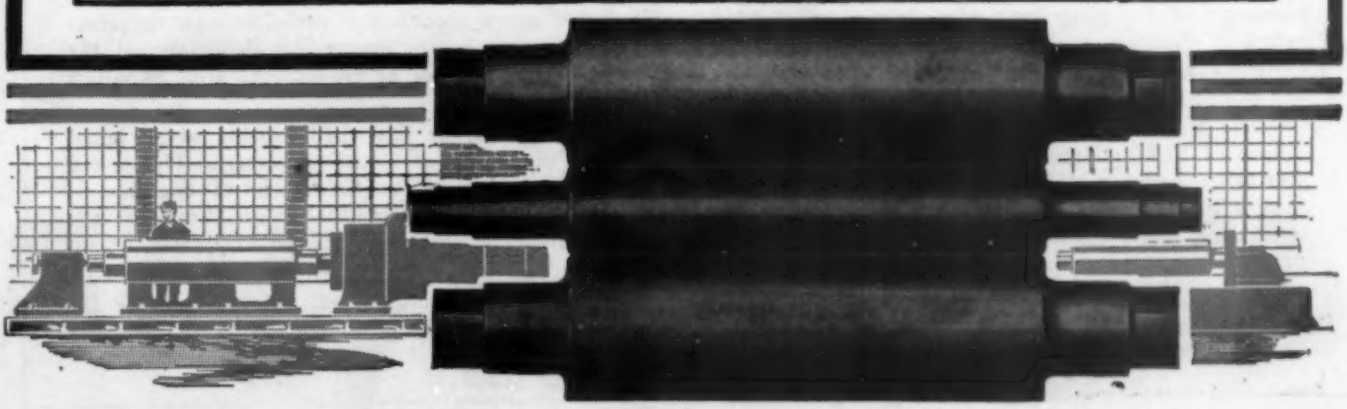
So Long,

Rolling Mill Jim.

Hubbard Steel Foundry Co

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings



Say you saw it in THE IRON TRADE REVIEW

chine tools, including a dozen hobbing machines, purchased last spring, has been delivered to the plant in the last several weeks, D. Miles, who has charge of the Automobile Machine Co.'s plant has stated that no more purchases will be made until after Jan. 1. It is understood that at that time a drop forge plant will be built and considerable forging equipment will be bought.

No inquiries of size are reported but a few tentative ones are being put out by railroads with a view only to determining an approximate amount for their appropriations or budgets. The Superior Steel Stamp Co., Cleveland, was in the market for a furnace but is reported to have closed. The American Steel & Wire Co., that city, is in the market for gear-cutting equipment. The Ritter Lumber Co., Columbus, O., wants presses, while the Louisville Sheet Steel Co., Louisville, O., is endeavoring to locate a used 24-inch x 14-foot lathe. The W. S. Tyler Co., Cleveland, is understood to be in the market for shears, while the Domestic Electric Co., that city, wants some small equipment. The W. J. Baird Machinery Co., Detroit, and Homer Strong, Rochester, N. Y., are two dealers who are seeking equipment in Cleveland for prospective customers. The former wants a No. 20-C O. B. I. Bliss press, while Mr. Strong wants a used 36-inch Fellows gear shaper.

Single inquiries for cranes alone are noted in the crane market. Among others, the McKinney Steel Co., Cleveland, wants a 16-ton electric crane.

Small Inquiries and Sales Prevail at Chicago

CHICAGO, Nov. 2.—Evidently following conditions in other markets, machine tool equipment continues in small demand. Business almost is at a standstill, with the exception of small inquiry and smaller buying of occasional tools. Curtailment of industry seems to have become sufficiently general to make enlargements unnecessary, with a resulting lack of buying.

An interesting feature of the tractor industry, which has been one of the most active in the equipment field for the past year or more, is the decision of the Moline Plow Co. to go out of that line of production, offering its material and equipment for sale through circulars and by salesmen. This places on the market considerable small tool equipment and a moderate number of machine tools, principally drill presses, riveting machinery and similar light tools.

Prices remain unchanged and deliveries are improving each week as builders get closer to the end of their order books. Railroads still delay closing their inquiries and refrain from putting out further lists. Financing is believed the cause of this. Some inquiry for locomotive cranes has been received recently, but other cranes are unusually quiet, a reflection of reduced building operations.

Canadian Sales Drop; Several Lists Expected

TORONTO, Nov. 1.—Sales of machinery and machine tools by dealers in Canada fell off slightly during the past week, but business for several months past was well in keeping with that of a year ago. Large lists continue absent, but reports that some fairly large lists are about to be placed before dealers now are current. Buying, however, has not started in the large volume anticipated. Prices are still holding firm and makers give little indication of any cutting. Dealers report good business in the rural districts.

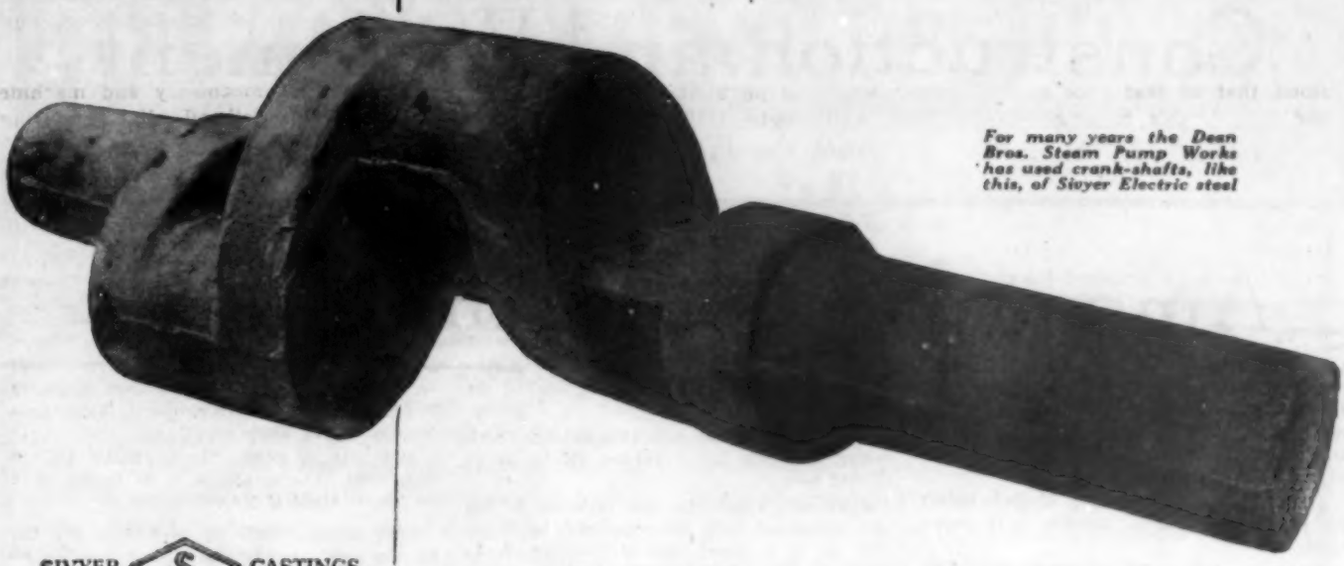
F. E. Willard, 4 Austin avenue, Toronto, is in the market for a portable sawmill, steam power, 30 or 35 horsepower. Westman & Baker, Ltd., 165 Adelaide street west, Toronto, contemplates the installation of additional equipment for the manufacture of printing machinery. Walter T. Johnson is manager. The Canada Asbestos & Chrome Co., Ltd., Coleraine, Que., is erecting an asbestos reducing mill and is in the market for jaw crushers, gyratory crushers, cyclone screens, fans, dryers and steam boilers. The Miami Axle Co., Ltd., St. Stephens, N. B., will rebuild its forge shop which was destroyed by fire last July. The new plant will be 60 x 160 feet, of steel and brick construction, in which a full line of machinery and equipment will be installed. Charles H. Henstis is president. The buildings at Leaside, Ont., erected by the United States government for a munitions factory have been sold to the Canada Wire & Cable Co., on whose land the buildings stand. The new owner proposes to equip the buildings with machinery and to operate them as an addition to its present plant. The Niagara, St. Catharines & Toronto railway, St. Catharines, Ont., is building car shops there at a cost of $60,000. The town of Cap de la Madeleine, Que., proposes to purchase the waterworks plant and system there and to extend it, installing new equipment at a cost of $150,000. P. L. W. Dupre, 20 St. James street, Montreal, has prepared plans and is receiving bids for the erection of a brass foundry and workshops for G. Dupont. William Robichaud, Sheila, N. B., is erecting a lumber mill there and is interested in prices of machinery and equipment for $7000 mill. The Montreal Light, Heat & Power Co., 83 Craig street, Montreal, Que., will start work at once on the erection of a transformer house. Clark Bros., Ltd., Bear River, N. S., is making arrangements for the erection of a paper mill there to cost $500,000.

Australia Will Require Much Electrical Equipment

TORONTO, Ont., Nov. 1.—D. H. Ross, Canadian trade commissioner for Australia, reports to the department of trade and commerce that the project of the government of Victoria for utilizing the brown coal resources of the state for the production of electricity presents a great opportunity for Canadian manufacturers of electrical equipment. Boring operations conducted by the state mines department demonstrated the existence at Morvell, 80 or 90 miles from Melbourne, of over 70 square miles of brown coal area, in which the deposits in some instances exceed a thickness of 200 feet.

The Morvell electric power plan comprises the erection of a plant on the coal field capable of an initial output of 50,000 kilowatts and labor of being developed up to a maximum of 150,000 kilowatts. The power will be conveyed to Melbourne by means of a transmission line, consisting in the first stage of one line of towers with two 3-phase circuits, each having a capacity of 25,000 kilowatts. The total expenditure for the generating and transmission plant, including the outlay for installation, is estimated at about $15,000,000. Tenders for the plant close at Melbourne on Feb. 24.

W. C. Chappell, assistant engineer to the electricity commissioners of Victoria, will visit Canada for the purpose of facilitating tenders from Canadian manufacturers and will be in Toronto from Dec. 5 to 12 to give any information desired by those contemplating making tenders.



For many years the Dean Bros. Steam Pump Works has used crank-shafts, like this, of Sivyer Electric steel

SIVYER S CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing quality and life. Both are attained by methods which begin with the design of the casting itself and frequently result in design improvements.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a thorough study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and precisely controls their application. In short, the Sivyer Service supervises every step necessary to secure unfailingly good castings of electric steel. From casting design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

Fatigue-Proof!

THIS crank-shaft casting is one of many interesting illustrations of the merits of Sivyer methods and metal that have won for Sivyer Steel Castings their nation-wide market. Crank-shaft castings must be absolutely sound, and made of a superior steel so thoroughly annealed that they will have to the utmost that positive strength and resistance to crystallization so vital to their function. For years Sivyer has produced for Dean Bros. cast crank-shafts so free from flaws, so proof against crystallization, that the record thus made has influenced a number of manufacturers in different sections of the country to come to Sivyer for similar castings.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Say you saw it in THE IRON TRADE REVIEW

Construction and Equipment

Concise and Timely Business Building Opportunities
from the Field of Industry

Among New England Plants

BOSTON.—The Alsatian Machine Works, Ltd., has been incorporated to build machinery with a capital stock of $25,000, by Louis M. Spencer, field, Mass., William P. Homans and Edward W. Atkinson, Brookline, Mass.

EVERETT, MASS.—The Boston Elevated Railway Co. plans car shops here, according to a current report.

HOLYOKE, MASS.—The Springfield Nokol Oil Burning Co., Inc., has been incorporated to make oil burners with a capital stock of $50,000, by K. J. Young, Patrick J. Carmody and Harry Mason.

LEOMINSTER, MASS.—The Progressive Mfg. Co. has been incorporated with $2500 capital by B. Tata, John Bangrazi and Anthony Villano.

LYNN, MASS.—The General Electric Co. has let the contract for a 1-story, 156 x 301-foot building.

LYNN, MASS.—The Beacon Folding Machine Co. has been incorporated with $100,000 capital by Otis L. Upham, Thomas C. Rowen, Swampscott, Mass., and Hiram E. Miller.

MEDFORD, MASS.—The DeCurtis Permutation Lock Co. has been incorporated to make locks with a capital stock of $25,000, by Louis M. Spencer, Malden, Mass., Frederick A. Komlosky and Frank DeCurtis.

NORTH WEYMOUTH, MASS.—The Brooks-Skinner Co., Inc., plans an addition to its plant, two stories, with a floor space of 15,000 square feet.

SOUTH BOSTON, MASS.—The Hersey Mfg. Co., builder of machinery, has let the contract for a 1-story, 50 x 100-foot factory addition, to cost $25,000.

WESTFIELD, MASS.—The Vitrified Wheel Co. plans an addition, one story, 80 x 100 feet, to cost $50,000.

WORCESTER, MASS.—The Thomas Smith Co., metal puncher and belt maker, has let the contract for a 1-story, 34 x 62-foot factory addition.

POULTNEY, VT.—The Williams Machine Co. is opening a machine shop for the manufacture of special machinery, etc.

NEWPORT, R. I.—The Hydro-Carbon Burner Mfg. Co. has been incorporated with $100,000 capital by C. Robert Lynch, David M. Syme, J. K. Sullivan, W. P. Sheffield and Frank O'Connell.

NORTH SMITHFIELD, R. I.—The Branch Tool Co. has been incorporated by Gustav A. Hoberg, A. Hoberg and F. G. Hoberg.

PROVIDENCE, R. I.—The DaCosta Mfg. Co. has been incorporated with $75,000 capital by John F. O'Donnell, John W. Nichols and James J. O'Donnell, Worcester, Mass.

PROVIDENCE, R. I.—Work has been started on the 2-story, 100 x 180-foot addition to the wire manufacturing division of the National India Rubber Co. When completed 192 3-decker weather proof wire braiding machines will be installed.

BRIDGEPORT, CONN.—The United States Automatic Indicator Co. has been incorporated with $500,000 capital by M. G. Usai, Gennaro Striano, Frank Maine, and Armando Scuglia.

HARTFORD, CONN.—The city has let the contract for a 2-story, 50 x 125-foot machine shop for the fire department.

SOUTH BREWER, ME.—The Eastern Mfg. Co. is erecting a 2-story, 111 x 140-foot addition to its finishing room.

HARTFORD, CONN.—The Taft Carburetor Co. has been incorporated with $500,000 capital by W. A. Gulle and J. J. Kinney, both of Providence, R. I., and L. E. White, East Weymouth, Mass.

NEW BRITAIN, CONN.—The Paul H. Vogle Mfg. Co. has been incorporated with $45,000 capital by Paul H. Vogle, Walter Vogle, Gus A. Vogle, Louis Nordgren and E. Klopp.

NEW HAVEN, CONN.—The H. Kasden Co., 19 Howe street, plans an addition to its foundry, 50 x 75 feet, at a cost of $10,000.

WEST HAVEN, CONN.—The West Haven Mfg. Co., 22 Elm street, manufacturer of hack saws, is reported planning a 2-story plant addition to cost $10,000.

North Atlantic States

ANDOVER, N. Y.—The Clay Cutlery Co. is erecting a factory building.

BINGHAMTON, N. Y.—Hider Bros., 15 Grand boulevard, plans a 1-story plant, 40 x 100 feet, for the manufacture of roller bearing specialties.

BUFFALO.—The Rome Wire Co. contemplates a heating plant.

BUFFALO.—The Liske-Wagner Co. has been incorporated to make bicycles and motors, with a capital stock of $15,000, by W. C. Shields, A. E. Wagner and C. Liske.

CANASTOTA, N. Y.—The Watson Truck Corp. has been incorporated with an active capital stock of $2,150,000, by H. Canler, A. A. Kessler and J. Soutet.

EAST RANDOLPH, N. Y.—The East Randolph Mfg. Corp. recently was incorporated with a capital stock of $50,000, by C. C. Tennies, R. and S. C. Henning.

NEW YORK.—The United States Steel Frame Co., 53 Wooster street, has completed plans for an extension to its plant to cost $17,000.

NEW YORK.—The American Can Co. has plans for a plant, four stories, 88 x 209 feet, in Baltimore.

NEW YORK.—The Railway Motors has been incorporated to make motor truck frames, with a capital stock of $60,000, by W. D. A. Rose, L. Prasher and H. S. Gray, 598 West 191st. street.

NEW YORK.—The Electro Steel Products Corp. has been incorporated with an active capital stock of $25,000, by J. C. Warren, J. S. Slattery and R. E. Weldon, 1475 Broadway.

NEW YORK.—The Kam-Lock Switch Box Co. recently was incorporated with a capital stock of $15,000, by A. Koppelson, G. Sutta and N. Frankel, 47 West Forty-third street.

NEW YORK.—A $40,000 factory building will be erected by the Colonial Mantle & Refrigerating Co., 494 Dumont avenue, Brooklyn. The building will be one story, 40 x 100 feet.

NEW YORK.—E. Wortman, 116 Lexington avenue, will award a contract shortly for a $40,000 factory building in Netuchen, N. J., for the General Ceramics Co., 50 Church street, New York.

NEW YORK.—Approximately $450,000 will be expended by the transit commission, 49 Lafayette street, for additional shops at its Lenox avenue and 148th street yards.

NIAGARA FALLS, N. Y.—The Niagara Metal Stamping Corp. has been incorporated with a capital stock of $150,000, by C. R. Robinson and others.

ROCHESTER, N. Y.—The Henry J. Schneider Co. has been incorporated to make batteries, etc., with a capital stock of $100,000, by H. R. Templeton, H. D. Shedd and H. J. Schneider.

SYRACUSE, N. Y.—The Chapin & Baker Mfg. Co. is having plans drawn for an office and factory building, one story, 40 x 98 feet and 66 x 138 feet.

ERIE, PA.—The Allen Machine Co. plans a foundry addition, 60 x 250 feet.

JOHNSTOWN, PA.—The Steel City Chemical Co. has been incorporated with a capital stock of $15,000, by F. T. Helder, George W. Thomas and D. S. Litzinger.

McKEES ROCKS, PA.—The Iron City Tin & Enameled Ware Co. has been incorporated with a capital stock of $10,000, by Louis F. Adelman, P. B. Gardner, Robert H. Kettach and others.

MORRISVILLE, PA.—C. A. Pidcock, 11 South Warren street, Trenton, N. J., plans a machine shop here at a cost of $30,000.

PHILADELPHIA.—A small machine shop addition will be erected here by Wild & Doss.

PHILADELPHIA.—Morris and Samuel Siegel and others, are organizing the Jefferson Brass Foundry & Mfg. Co.

PHILADELPHIA.—The Commercial Truck Co. has purchased a site for a plant at the northwest corner of Vine and Franklin streets.

PHILADELPHIA.—The Vulcan Foundry Co. is being organized by Frank A. Moorehead, Commonwealth building and others.

PHILADELPHIA.—The Eastern Foundry & Machine

FOR ECONOMY OF SPACE AND POWER

—are you wasting either?

When you figure on big reductions with a train of spur gears be sure to take into consideration the wastage of space and power. Herringbone Gears make direct reductions as high as 20 to 1, thereby saving space and power losses.

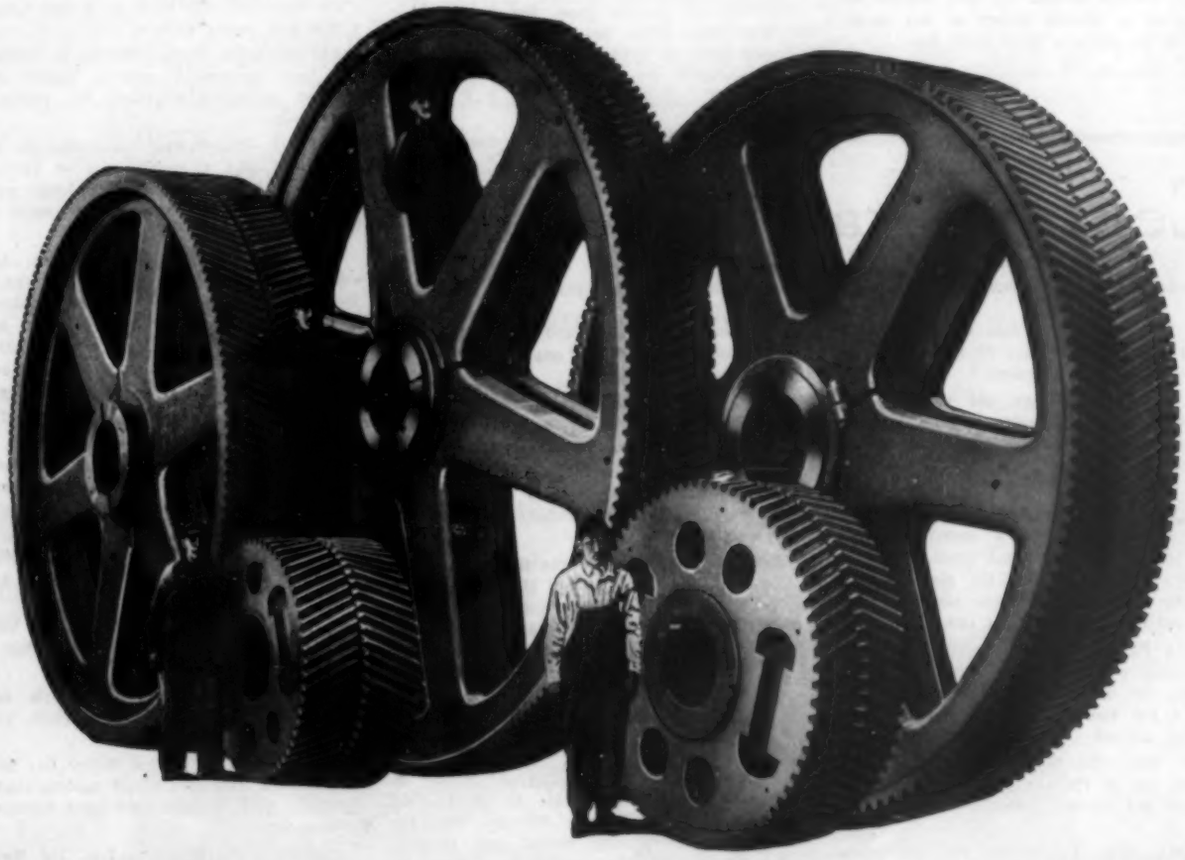
This type of gear has many other advantages: The action is continuous and smooth; there is no shock of transference from tooth to tooth; the teeth do not wear out of shape; the bending action of the load on the teeth is less than with straight gearing; "back-lash" is entirely absent; friction and mechanical losses are reduced to a minimum; herringbone gears can be used at greater velocities than any other kind.

Herringbone Gears are hobbed from the solid by means of special machinery to get precision heretofore not attained in gear cutting. They are far more efficient than belts, ropes, worm gears or compound trains of spur gears. They are particularly quiet in action and cause practically no vibration—two big advantages which are lacking in spur gears.

Our descriptive booklet contains much valuable information concerning gears and gearing problems. Send for it today.

The Falk Company, Milwaukee, Wis.

AGENTS: Pittsburgh—W. O. Beyer, 1007 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.



FALK HERRINGBONE GEARS

Co., Liberty building, has awarded a contract for a plant, 60 x 120 feet, to cost $25,000.

PHILADELPHIA.—The J. F. Stokes Machine Co. is receiving bids through the John N. Gill Co. on a new factory building.

PHILADELPHIA.—The Hughes Foulkrod Co. of this city has been awarded a contract for the erection of a $75,000 plant addition for the Railway Steel Spring Co., Chicago.

PHILADELPHIA.—Clark & Dudnick, architects, will soon receive bids on the construction of a 1-story factory building, 50 x 100 feet, and a foundry, 50 x 80 feet.

PHILADELPHIA.—Contracts have been awarded to the J. S. Rogers Co. for the erection of a factory building for the Fox Motor Car Co. The building will be 3-stories, 60 x 400 feet, and cost $300,000.

PITTSBURGH.—The Oil Well Supply Co., 215 Water street has a site on which it plans a warehouse and machine shop at a cost of $250,000.

PITTSBURGH.—The National Gear & Truck Wheel Co. is having plans prepared for a number of buildings at Vanport, Pa.

PITTSBURGH.—The Driggs Equipment Co. recently was incorporated with a capital stock of $10,000, by L. J. Driggs, Johnstown, Pa., W. J. Philip and E. C. Johns, Roselle, N. J.

PITTSBURGH.—The Dickinson Co., Inc., machinery, recently was incorporated with a capital stock of $5000, by William R. Seidel, Warren E. Dexter and John T. Weeks.

PITTSBURGH.—The Ft. Pitt Construction Co. has been incorporated with a capital stock of $25,000, by J. G. Eckerman, A. P. Schaefer and George A. Hopper.

READING, PA.—A contract has been awarded for the erection of a $40,000 factory at Oak Brook, near here, for the Schwartz Motor Truck Co.

WARREN, PA.—The Struthers-Wells Co., Pennsylvania avenue, boilers, tanks, etc., plans a forge shop, 68 x 140 feet and a 1-story boiler plant, 40 x 85 feet, to cost about $100,000.

WILKINSBURG, PA.—The Automotive Service & Mfg. Co. has been incorporated with a capital stock of $20,000, by Robert E. Dickinson, Victor D. Youngkins, Eric C. Loewinstein and others.

BELLEVILLE, N. J.—The Essex Engine & Machine Corp. has merged with the Hewes & Phillips Iron Works of Newark, and the new consolidation will start work shortly on a 52 x 70-foot addition to the Essex plant. Officers of the new company are: President, John Hozack; vice president, Dudley Drake, and secretary and treasurer, James Hozack.

BUTLER, N. J.—The Magneto Parts Mfg. Corp. plans the erection of two plant buildings, 50 x 200 feet and 50 x 80 feet at an estimated cost of $200,000.

HOBOKEN, N. J.—The Atlantic Mfg. Co. has been incorporated with a capital stock of $150,000, by R. C. Moore, Harry Schwartz and Richard W Guthell, 15 Newark street, to manufacture metal products.

JERSEY CITY, N. J.—The Franklin Car Co. has been incorporated with a capital stock of $100,000, by P. H. Glorieux, George Getzoff and others.

JERSEY CITY, N. J.—The Live Wire Electrical Appliances Co., 181 Griffith street, has been organized by Edward Mahlen and others.

JERSEY CITY, N. J.—The H. B. Polak Mfg. Co., 279 Magnolia avenue, has been organized to manufacture electrical equipment, by Henry B. Polak and others.

JERSEY CITY, N. J.—The John R. Forbes Foundry & Iron Works has been organized by John R. Forbes, 505 Valley Place, South Orange, N. J., and others.

TRENTON, N. J.—The Arrow Signal Mfg. Corp., 227 East Front street, has been incorporated with a capital stock of $200,000, to manufacture automobile accessories, etc., by C. C. Rose and others.

Central States Activity

AMERY, WIS.—The Amery Auto Co. has let the contract for a garage, one story, 50 x 150 feet, to cost about $37,000 with machinery.

ANTIGO, WIS.—The foundry and machine shop formerly occupied by the International Hoist Co. and the Pioneer Iron Works has been taken over by the Antigo Foundry Co. The plant is undergoing rehabilitation.

ASHLAND, WIS.—The Ashland Machine & Paper Co. has been organized with a capital stock of $100,000, by John A. Martin and others. For the present the company will use the plant of the Bretting Iron Works, but next year plans to erect a foundry and machine shop of its own.

CHIPPEWA FALLS, WIS.—New machine tool and other equipment will be purchased by the Yates-Johnson Co., for the second unit of its machine works, 48 x 100 feet. The capacity of the foundry is also being enlarged.

CUDAHY, WIS.—The Worthington Pump & Machinery Corp. has let the contract for a 4-story mill pattern shop and pattern storage extension, 60 x 175 feet.

KAUKAUNA, WIS.—The Moloch Co. has broken ground for a new manufacturing group consisting of a machine shop and erecting floor. The unit will be 75 x 150 feet.

KENOSHA, WIS.—The Master Seeder Co., Milwaukee, has opened negotiations with a view to relocating its works in this city. It manufactures farm implements. H. A. Zimmerman is president.

MILWAUKEE.—The McClymont Marble Co. will build a crane runway, 50 x 150 feet, and will install a 5-ton electric traveling crane.

MILWAUKEE.—The Milwaukee Specialty Mfg. Co. has been incorporated with a capital stock of $15,000, to manufacture specialties, etc., by Otto P. Werner, Theodore W. Arnst and Albert C. Ziemann.

MILWAUKEE.—The Nelson Timer Co., capitalized at $15,000, has been chartered to manufacture gas engine devices by Charles Steinmetz Jr., 425 East Water street, and others.

MILWAUKEE.—Members of the Birkholz Engineering Co., Inc., 821 Merchants and Manufacturers Bank building, have incorporated the Mechanical Equipment Sales Co. with a capital stock of $5000.

MILWAUKEE.—Instead of waiting until next spring as originally planned, the Milwaukee Boiler Mfg. Co., 220 Oregon street, has decided to start at once on the erection of a new plant, the machine shop unit to be 140 x 180 feet.

MILWAUKEE.—A new fabricating and erecting interest has been established here by O. Lubinski. He has organized the Keystone Structural Steel Co., 711 Chestnut street, with limited shop facilities, pending the erection of a structural shop during the coming year.

MUSCODA, WIS.—The Muscoda Mfg. Co. plans a factory building, two stories, 75 x 100 feet, at a cost of $50,000.

PORT WASHINGTON, WIS.—The Turner Mfg. Co., which embarked on extensive plant enlargement program two months ago, has decided to defer the erection of additions to its foundry and machine shop until early next spring.

PRINCETON, WIS.—The Princeton Power & Light Co. plans a hydroelectric plant.

RACINE, WIS.—The Armstrong Foundry Co., which has been making improvements to its plant, has increased its capital stock from $75,000 to $150,000.

SCHLEISINGERVILLE, WIS.—Zwebell Bros., 562 Milwaukee street, Milwaukee, have purchased a site here on which it plans a 1-story machine shop.

SHEBOYGAN, WIS.—A 1-story addition, 40 x 100 feet, will be built to the Optenberg Iron Works Co. R. W. Busse is manager.

WAUPACA, WIS.—The Waupaca Electric Service & Railway Co. has increased its capital stock from $50,000 to $100,000, to finance extensions and improvements.

WAUPACA, WIS.—Contracts have been awarded by the Jorgenson Mfg. Co. for a brass foundry, 80 x 122 feet, to be equipped with five electric melting furnaces.

WAUWATOSA, WIS.—The Aromatic Products Co. plans a chemical plant, two stories, 40 x 80 feet, at a cost of $60,000.

WEST BEND, WIS.—The Combustion Engineering Co., 11 Broadway, New York, has taken the contract to build a new steam power plant, 113 x 150 feet, for the West Bend Heating & Lighting Co., at a cost of $145,000.

DETROIT.—The Allen Screen Co. plans a factory building, one story, 48 x 96 feet, to cost $10,000.

DETROIT.—The Stearns Register Co. plans a factory building, one story, 100 x 185 feet.

DETROIT.—Tiltlock Steering Wheel Co. has been incorporated with a capital stock of $10,000, by William F. Fliedner, 403 Edison avenue, and others.

DETROIT.—The General Spring & Wire Co., C. L. Clark secretary, will build a 1-story plant, 300 x 250 feet, costing $175,00.

DETROIT.—The Master Welding & Cutting Corp. has been incorporated with a capital stock of $25,000, by Walter D. Grant, 363 Holden avenue, and others.

DETROIT.—The Sterling Construction Co. has been incorporated with a capital stock of $125,000, by Fred C. Van Slyke, 515 Ford building, and others to do metal construction work and general engineering practice.

DETROIT.—The Cove Motor Car Co. has been organized under the laws of Delaware with an authorized capital stock of $500,000 preferred and 5000 shares of non-par value common stock, to manufacture motor cars. Harry E. Cove, 279 Grand River avenue, is president and general manager.

HOLLY, MICH.—The Wright-Fisher Bushing Co. plans a factory building, one story, 35 x 120 feet, to cost $10,000.

JACKSON, MICH.—The Vulcanizing Machine & Supply Co. has been incorporated with a capital stock of $25,000, by Mark Merriman and others, to manufacture vulcanizing machines.

MT. CLEMENS, MICH.—The Sauzedde Mfg. Corp. plans a plant, one story, 100 x 150 feet, at a cost of $75,000.

CHICAGO.—The Chicago Steel Spring Co. has awarded a contract for an addition to its plant to cost $75,000.

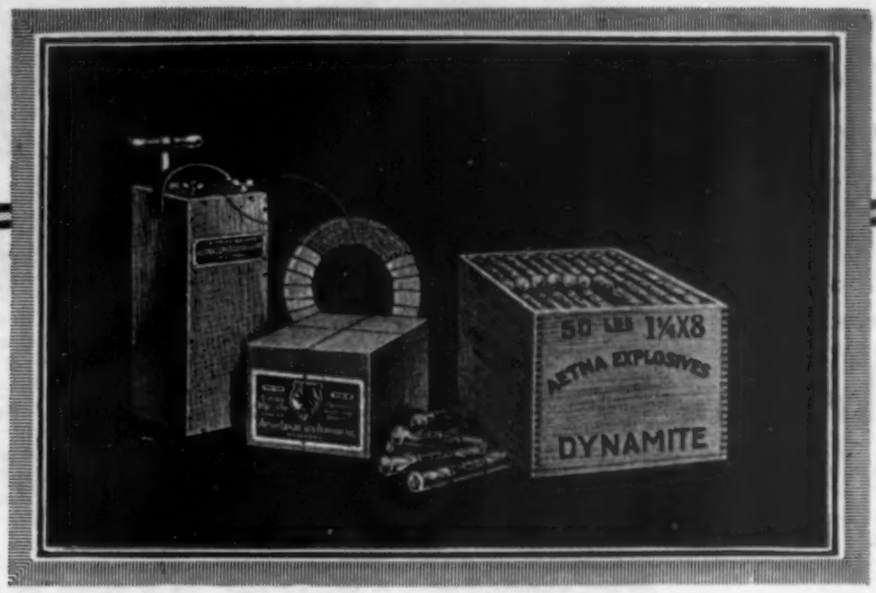
CHICAGO.—The Waltham Motor Corp. has plans for a factory building and power plant, one story, 50 x 100 feet.

CHICAGO.—The Mechanical Rubber Co., 2635 West Grand avenue, will build a coal handling plant costing $20,000. S. B. Lincoln, 1235 South Dearborn street, is engineer.

CHICAGO.—The Toymakers, Inc., 155 North Clark street recently was incorporated to manufacture toys, etc., with a capital stock of 1000 shares, no par value, by F. W. Kramer, L. E. Olsen, Jules Urban and others.

EAST MOLINE, ILL.—The Moline Pressed Steel Co. is reported planning an enameling room, 36 x 150 feet.

ANDERSON, IND.—The Anderson Die & Model



CUTS DOWN FUMES

MINERS the country over lose much valuable time because of dynamite fumes. And when your miners lose time *your production suffers!*

This condition is satisfactorily overcome by Aetna Gelatins, Ammonia Dynamites, and Permissible Powders. They are becoming better known every day as a class of explosives which give off a surprisingly low amount of objectionable fumes.

Their use in your mine will please your men, increase production and lower your tonnage cost.

AETNA PRODUCTS: Dynamites, Gelatins, Permissible Powders, Black Blasting Powder, Sporting Powder, Smokeless Shotgun Powder, Blasting Caps, Electric Blasting Caps, Blasting Machines, Safety Fuse, Rheostats, Cap Crimpers, Leading Wire, Storage Magazines, Cordeau-Bickford, Galvanometers, Connecting Wire, Thawing Kettles, Etc., Etc.

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AETNA EXPLOSIVES COMPANY, INCORPORATED, 165 Broadway, New York

Birmingham, Ala. Buffalo, N. Y. Chicago, Ill. Denver, Colo. Duluth, Minn. Joplin, Mo. Louisville, Ky. Norristown, Pa. Pittsburgh, Pa. Pottsville, Pa. Roanoke, Va. St. Louis, Mo. Wilkesbarre, Pa.

Co. and the Twin Coaster Co. have been merged with a capital stock of $100,000.

ANDERSON, IND.—The Star Automotive Specialty Co. plans a building for the manufacture of auto accessories.

ELKHART, IND.—The Ryan-Kellogg Conveyor Corp. recently was organized with a capital stock of $200,000 by H. J. Ryan, E. T. Kellogg and David M. Hoover.

EVANSVILLE, IND.—The Stocky Specialty Co., capitalized at $25,000, has been chartered to manufacture automotive parts by Adolph Stocky, Frank Spangler and Charles Byers.

GARY, IND.—The Universal Stag Brick & Tile Co., C. Mendius manager, Fifty-ninth avenue and Sixty-sixth street, Chicago, will build a 1-story plant 100 x 140 feet at Gary, costing $200,000.

HAMMOND, IND.—The Central Railway Signal Co. plans to rebuild two factory buildings.

INDIANAPOLIS.—In order to make possible an expansion program, the American Foundry Co. has increased its capital stock from $40,000 to $300,000.

In the South

GLASGOW, KY.—The Farmers' Wheel Rake Co. recently was incorporated with a capital stock of $5000, by J. R. Spurling, J. A. Burks and O. B. Gentry.

KNOXVILLE, KY.—The Measurite Co., measuring machines, recently organized with a capital stock of $250,000, plans a plant at a cost of $50,000.

LOUISVILLE, KY.—The Stimpson Computing Scale Co. is reported planning to enlarge its plant.

LOUISVILLE, KY.—The Perfect Combination Shirt Machine Mfg. Co. has been incorporated by C. H. Boyuls, A. A. Myers and O. D. Duffin.

LOUISVILLE, KY.—The Perfect Steam Sterilizer Co. has been incorporated with a capital stock of $300,000, by W. E. Crutcher, J. C. Darnell and S. O. Wieland.

PIKEVILLE, KY.—The Pike Light & Power Co. is reported planning improvements to its plant at a cost of $40,000.

PLEASUREVILLE, Ky.—Joseph Glviden plans to rebuild his machine shop which was recently damaged by fire.

WASIOTO, KY.—The Wasioto Light & Power Co. has been organized with a capital stock of $30,000, by E. M. Bell and others.

WILLIAMSBURG, KY.—The Williamsburg Electric Co. has been organized with a capital stock of $1000, by C. Perkins and others, and will construct a power house, 30 x 60 feet, etc.

CHATTANOOGA, TENN.—The Callendar Car Co. recently increased its capital stock from $20,000 to $40,000.

CHATTANOOGA, TENN.—The Mutual Enamel Works Co. is having plans drawn for a foundry and enamel works, to cost $300,000.

DYERSBURG, TENN.—This city plans to install an electric light and water system.

LENOIR CITY, TENN.—The Lenoir City Car Works is reported planning an addition to its plant.

NASHVILLE, TENN.—The Automobile Bearings Co. has been incorporated with a capital stock of $10,000 by H. C. Jacobs, J. M. Curry and Frank Sanderson.

KNOXVILLE, TENN.—The Wright-Dance Range & Furnace Co. has been organized with a capital stock of $25,000, by R. P. Wright, J. M. Dance and C. O. Pennington.

GREENSBORO, N. C.—The Carolina Steel & Iron Co. plans to enlarge its plant at an estimated cost of $50,000.

RED SPRINGS, N. C.—This city plans to install electric light and water systems.

WILSON, N. C.—This city plans to install a modern electric light system.

LAMAR, S. C.—The Lamar Power & Light Co. has been franchised to furnish power and light.

CHARLESTON, S. C.—The Baxter & Allen Iron Works recently was incorporated by Thomas B. Allen, George E. Grimball and others.

CLIO, S. C.—Dave Stewart is reported planning to equip a machine shop and foundry.

COLUMBIA, S. C.—The J. H. Minor Saw Mfg. Co., is reported planning a manufacturing plant here.

GREENVILLE, S. C.—The Peerless Pole & Ladder Co. is reported planning a factory building, 1-story, 60 x 100 feet, to cost $50,000.

MILNER, GA.—P. W. Ethridge plans to make some improvements at his power house.

REBECCA, GA.—This city will install an electric light and water plant.

TRION, GA.—The Trion Co. plans to erect a 1-story addition to its power house.

BIRMINGHAM, ALA.—The Conners Steel Co. plans an addition to its plant, 77 x 400 feet, to cost $50,000.

Business in Canada

WINNIPEG, MAN.—The Waldorf Paper Products Co. is building an addition to its plant, two stories, 20 x 40 feet, at a cost of $20,000. Electric conveyors, baling machines and sorting equipment will be installed at a cost of $12,000.

ST. STEPHENS, N. B.—The reorganization of the Mami Axle Co., Ltd., is announced and the new concern has increased its capital stock from $50,000 to $200,000. It is the intention to rebuild the forge shop which was damaged by fire last July. The new plant will be 60 x 160 feet and will be modern in every respect. A full line of machinery and equipment will be installed. The officers are: President, Charles E. Henstis; vice president, James Arnold, Brockville, Ont.; secretary-treasurer, J. A. Briggs; directors, Hon. George P. Graham, Brockville, Ont.; T. J. Dillon and B. J. McCormack, Welland, Ont.

MONTREAL, QUE.—The Mongolia Metal Co. of Canada is building an addition to its plant at a cost of $25,000.

MONTREAL, QUE.—Maguire, Paterson & Palmer, Ltd., have been incorporated to erect a plant at a cost of $5,000,000. Frank B. Common and others are interested.

MONTREAL, QUE.—The Canadian Electrical Corp., Ltd., has been incorporated to manufacture electric railway apparatus, etc., with a capital stock of $1,000,000, by Laurette Genest, Ronald B. Sutherland and others.

MONTREAL, QUE.—The Simonds Canada Saw Co., Ltd., is building an addition, one story, 70 x 175 feet, at a cost of $50,000.

GRAND MERE, QUE.—The Modern Patents Co. has been organized to manufacture pulp and paper machinery, etc., and is looking for a suitable site on which to erect a plant.

BRANTFORD, ONT.—The Brantford Machine & Tool Co., Ltd., recently incorporated, will take over the plant and business of the Brantford Machine & Tool Co. In addition to the old line of machine and machine tool work the new concern will enter into the manufacture of garage equipment, such as bench presses boring tools and small air compressors. William J. Ham will take an active part in the business.

CODERICH, ONT.—The C. H. Epps Mfg. Co., Ltd., has been incorporated to manufacture semi-diesel, marine, stationary and other engines, machinery, etc., with a capital stock of $40,000, by Clifford H. Epps, Varna, Ont., George S. Young, 40 Poulina avenue, and others.

HAMILTON, ONT.—It is stated that work on the enlargement and rebuilding of blast furnace No. 3 and on the third and fourth batteries of the Otto coke plant of the Steel Co. of Canada, Hamilton, Ont., has been discontinued for the present.

NIAGARA, FALLS, ONT.—Kinsinger-Bruce, Ltd., has been incorporated to manufacture iron, steel, metals, machinery, tools, lamps, car fittings, etc., with $250,000 capital stock; by William H. McGuire, 60 Victoria street; George F. Rooney, 204 Sunnyside avenue, and others.

OTTAWA, ONT.—T. H. Plant, Ltd., has been incorporated to manufacture automobiles, etc., with a capital stock of $50,000, by F. H. Plant, Herbert A. Plant and others.

ROCKWOOD, ONT.—Guarantee Batteries, Ltd., have been incorporated to manufacture electric batteries, machinery, tools, accessories, etc., with $300,000 capital, by Charles L. Dunbar, Leo W. Goetz, James Sutherland and others, all of Guelph, Ont.

TORONTO, ONT.—The Automatic Timers, Ltd., has been incorporated to manufacture engines, etc., with a capital stock of $40,000, by Samuel King, 67 Yonge street, E. Lane and others.

TORONTO, ONT.—Westman & Baker, Ltd., has been incorporated to manufacture machinery, etc., with a capital stock of $100,000, by Robert Wherry, 157 Bay street, William Zimmerman and others.

TORONTO, ONT.—The Fulton Motors, Ltd., have been incorporated to manufacture motor trucks, automobiles, etc., with $2,000,000 capital, by Alfred W. Briggs, Ernest M. Dillon and others.

TORONTO, ONT.—The Motor Sundries Corp., Ltd., has been incorporated to manufacture automobiles, etc., with $500,000 capital, by Russell P. Locke, 120 Bay street; Grant Cooper and others.

TORONTO, ONT.—The Ross Electric Appliances, Ltd., have been incorporated to manufacture electrical supplies, machinery, motors, etc., with $40,000 capital, by Charles A. Barron, 268 Sherbourne street; John H. Ross and others.

TORONTO, ONT.—The Canadian Edison Appliance Co., Ltd., has been incorporated to manufacture electrical specialties, etc., with a capital stock of $525,000, by William A. J. Case, James B. Taylor and George E. Atwood.

TORONTO, ONT.—The Precision Tool Works, Ltd., have been incorporated to manufacture tools, dies, stampings, metal goods, etc., with $40,000 capital, by Reginald Homer, 99 Strathmore boulevard; Henry S. Moore and others.

TORONTO, ONT.—The Advance Products, Ltd., has been incorporated to manufacture paper ballers, automobile heaters, etc., with a capital stock of $300,000, by Wilfrid W. Parry, 60 Victoria street, Horace B. Proudlove and others.

TORONTO, ONT.—The Canadian Hoffman Machinery Co., Ltd., has been incorporated to manufacture pressing machinery, etc., with a capital stock of $40,000, by S. E. Wedd, 18 Elm Grove avenue, Roy B. Whitehead, 85 Bay street and others.

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Fire equipment must of necessity be powerfully and marvelously constructed to resist the sudden strains, shocks and unavoidable abuses constantly met with in the performance of their urgent mission.

The manufacturers of the justly famous—"Seagrave" Fire Equipment realize the value of Farrell-Cheek Steel Castings for their exacting needs and specify them at all times.

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"Makers of castings that are a little better than the next best."

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Local Representatives and Offices:

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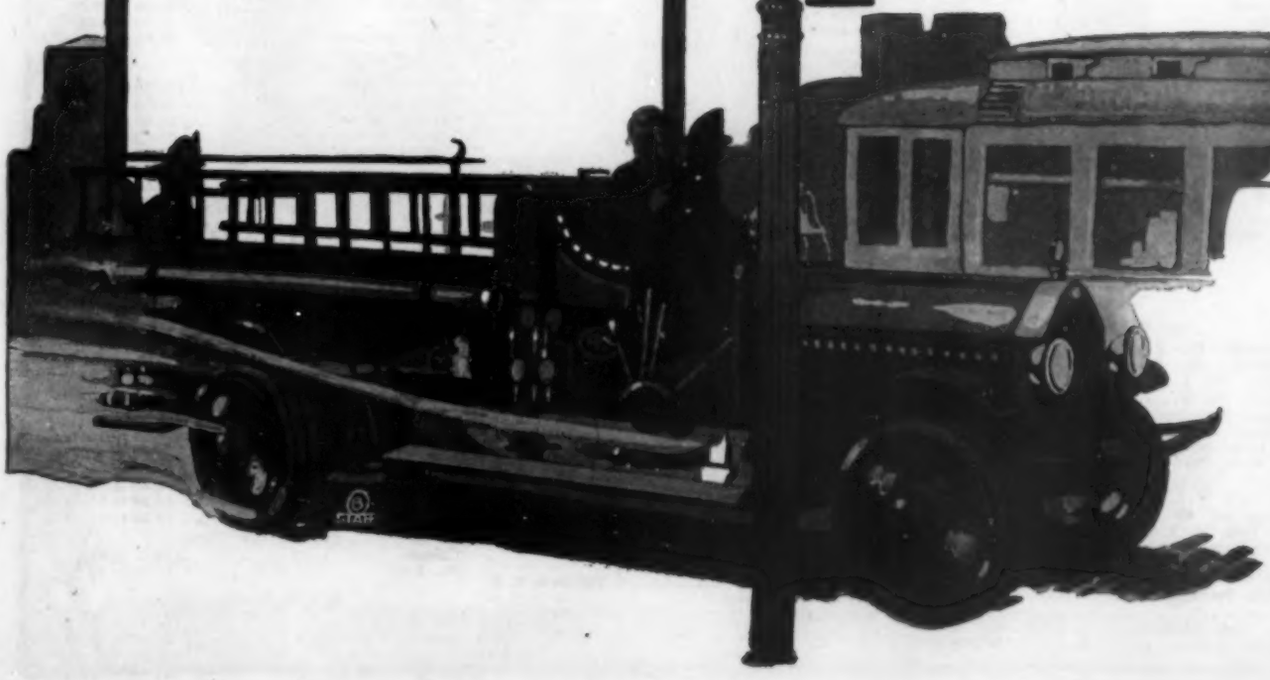


Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Pittsburgh	$25.00 to 25.50
Chicago	20.00 to 20.50
Eastern Pennsylvania	23.50 to 24.00
Cleveland	24.25 to 24.75
St. Louis	19.00 to 19.50
Buffalo	23.00 to 24.00
New York (dealers)	17.00 to 18.00
Birmingham	19.00 to 20.00
Cincinnati	22.00 to 22.50
Valleys	25.00 to 25.50
Boston (dealers)	16.00 to 17.00
Detroit	18.00 to 18.50

BUNDLED SHEETS

Pittsburgh	$15.50 to 16.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	14.00 to 14.50
Buffalo	15.50 to 16.00
Cincinnati	15.00 to 16.00
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Chicago	$23.00 to 23.50
Boston (dealers)	17.00 to 18.00
Cleveland	22.00 to 23.00
St. Louis	21.00 to 21.50
Birmingham	18.00 to 20.00
Cincinnati	27.00 to 28.00
Detroit	21.00

STOVE PLATE

Pittsburgh	$27.00 to 23.00
Chicago	27.50 to 28.00
Eastern Pennsylvania	25.00 to 26.00
Cleveland	28.00 to 28.50
Detroit	22.00 to 23.00
Birmingham	24.00 to 25.00
Buffalo	28.00 to 29.00
New York	23.50 to 24.00
St. Louis	23.00 to 23.50
Cincinnati	26.50 to 27.00
Boston (consumers)	24.00 to 25.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$32.00 to 33.00
Eastern Penn. (guaranteed)	33.00 to 34.00
Buffalo	32.00 to 32.50

SHOVELING STEEL

Chicago	$19.50 to 20.00
St. Louis	18.00 to 18.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$31.50 to 32.00
Chicago	23.50 to 24.00
St. Louis	21.00 to 21.50
Eastern Pennsylvania	28.00 to 29.00

COMPRESSED SHEETS

Pittsburgh	$21.00 to 22.00
Chicago	16.00 to 16.50
Buffalo	22.50 to 23.00

FROGS, SWITCHES, GUARDS

Chicago	$20.00 to 20.50
St. Louis	18.00 to 18.50
Eastern Pennsylvania	23.00

BOILER PLATE, CUT

Detroit	$12.00 to 12.50
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	$22.50 to 23.00
St. Louis	21.00 to 21.50

Iron Mill Scrap

RAILROAD WROUGHT

Pittsburgh, No. 1	$26.00 to 27.00
Pittsburgh, No. 2	25.00 to 26.00
Chicago, No. 1	21.25 to 21.50
Chicago, No. 2	21.25 to 21.50
Eastern Pennsylvania No. 1	27.00 to 28.00
Cleveland, No. 1	28.50 to 29.00
St. Louis, No. 1	21.00 to 21.50
St. Louis, No. 2	19.00 to 19.50
Buffalo	30.00 to 31.00
Cincinnati	26.00 to 27.00
Birmingham, No. 1	18.00 to 20.00
New York No. 1 (dealers)	25.00 to 26.00
Boston (dealers)	23.00 to 23.00

WROUGHT PIPE

Eastern Pennsylvania	$21.00
Buffalo	18.00 to 19.00
New York (dealers)	16.00 to 17.00
Boston (dealers)	14.00 to 15.00

YARD WROUGHT

Boston	$20.00 to 21.00
Eastern Pennsylvania, No. 1	$25.00 to 26.00

BOILER WROUGHT

New York, long (dealers)	$22.50 to 23.00

BUSHELING

Chicago, No. 1	$19.75 to 20.25
Chicago, No. 2	10.75 to 11.25
Cleveland, No. 1	20.50 to 21.00
Cleveland, No. 2	16.75 to 17.25
St. Louis, No. 1	19.00 to 19.50
Buffalo No. 1	19.00 to 20.00
Cincinnati, No. 1	20.00 to 21.00
Eastern Pennsylvania, No. 1	17.00 to 18.00
Detroit No. 2	8.50 to 9.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.00 to 15.50
Chicago	8.50 to 9.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	11.75 to 12.00
Buffalo	13.50 to 14.50
New York (dealers)	13.50 to 14.00
St. Louis	9.00 to 9.50
Detroit	8.00 to 8.50
Cincinnati	10.00 to 11.50
Birmingham	10.00 to 12.00
Valleys	12.50 to 13.00
Boston (dealers)	12.00 to 13.00

CAST IRON BORINGS

Pittsburgh	$16.50 to 17.50
Chicago	11.00 to 11.50
Eastern Pennsylvania	22.00 to 23.00
Eastern Pennsylvania (chemical)	23.00 to 24.00
Cleveland	16.00 to 16.50
St. Louis	11.00 to 11.50
Detroit	11.50 to 12.00
Buffalo	17.50 to 18.00
New York (dealers' price)	16.50 to 17.00
Cincinnati	13.50 to 14.50
Birmingham	10.00 to 12.00
Valleys	17.50 to 18.00
Boston (dealers)	15.00 to 16.00

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Eastern Pennsylvania	$15.00 to 15.50
Boston (dealers)	11.00 to 12.00
Cleveland	16.00 to 16.50

IRON AXLES

Pittsburgh	$52.00 to 53.00
New York (dealers)	42.00 to 43.00
Chicago	42.50 to 43.00
Eastern Pennsylvania	45.00 to 46.00
Detroit	34.00
Cleveland	46.00 to 47.00
St. Louis	38.00 to 38.50
Buffalo	36.00 to 37.00
Cincinnati	
Birmingham	25.00 to 27.50

IRON RAILS

Chicago	$33.50 to 34.00
Cleveland	31.00 to 32.00
St. Louis	30.00 to 31.00
Buffalo	31.00 to 32.00
Cincinnati	26.00 to 27.00

PIPES AND FLUES

Chicago	$15.50 to 16.00
Cleveland	22.50 to 23.00
Detroit	11.00 to 11.50
St. Louis	14.50 to 15.00
Cincinnati	18.00 to 19.00

GRATE BARS

Chicago	$24.00 to 24.50
Cleveland	29.00 to 30.00
Detroit	19.00 to 19.50
Buffalo	22.00 to 23.00
New York	23.00 to 24.00
Eastern Pennsylvania	27.00 to 29.00

FORGE FLASHINGS

Cleveland, large	$20.00 to 21.00
Chicago, small	18.00 to 18.50
Cleveland, small	18.00 to 19.00
Boston (dealers)	10.00 to 11.00
Detroit	19.00 to 20.00

FORGE SCRAP

Chicago	$20.25 to 21.25
Eastern Pennsylvania, No. 1	17.00 to 18.00
Boston	10.00 to 11.00

ARCH BARS AND TRANSOMS

Chicago	$36.00 to 36.50
St. Louis	31.00 to 31.50

ANGLE BARS—IRON

Chicago	$34.00 to 34.50
St. Louis	27.50 to 28.00

Iron and Steel Works Scrap

AXLE TURNINGS

Pittsburgh	$21.00 to 22.00
Eastern Pennsylvania	21.00 to 22.00
Boston (dealers)	13.00 to 14.00
St. Louis	12.00 to 12.50
Detroit	$15.00 to 15.50
Cleveland	18.00 to 19.00
Buffalo	18.50 to 19.50
Chicago	17.00 to 17.50

STEEL CAR AXLES

Pittsburgh	$42.00 to 43.00
Eastern Pennsylvania	40.00
Cleveland	37.00 to 38.00
St. Louis	31.00 to 31.50
Buffalo	36.00 to 37.00
Chicago	35.50 to 36.00
New York (dealers)	27.00 to 28.00
Birmingham	26.00 to 28.00
Boston (dealers)	28.00 to 29.00
Detroit	29.00

SHAFTING

Eastern Pennsylvania	$32.00 to 33.00
St. Louis	30.00 to 30.50
New York (dealers)	25.00 to 26.00
Chicago	33.00 to 33.50
Boston (dealers)	28.00 to 29.00

Iron Foundry Scrap

CAR WHEELS

Pittsburgh, iron	$40.00 to 41.00
Pittsburgh, steel	27.00 to 28.00
Chicago, iron	34.00 to 34.50
Eastern Pennsylvania, iron	39.00 to 41.00
Cleveland, iron	37.00 to 38.00
St. Louis, iron	33.00 to 33.50
Buffalo, iron	37.00 to 38.00
Birmingham, iron	28.00 to 30.00
Birmingham, tram car	27.00 to 30.00
Boston (consumers)	33.00 to 34.00
New York, iron	35.00 to 36.00
Detroit	25.00 to 26.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$39.00 to 40.00
Chicago, cupola	29.50 to 30.00
Eastern Pennsylvania, cupola	36.00 to 38.00
Cleveland, cupola	38.50 to 39.00
New York cupola (dealers)	35.00 to 36.00
Cincinnati, No. 1 machinery, cupola (net)	34.00 to 35.00
Detroit	33.00 to 34.00
Birmingham, cupola	31.00 to 32.00
St. Louis, railroad	30.00 to 30.50
St. Louis, agricultural	29.00 to 29.50
Buffalo	37.00 to 38.00
Boston (consumers)	40.00 to 41.00
Valleys	39.00 to 40.00

HEAVY CAST

New York (dealers)	$32.00 to 33.00
Buffalo	27.00 to 28.00
Pittsburgh	30.00 to 31.00
Cleveland	29.00 to 29.50
Boston (consumers)	33.00 to 34.00

MALLEABLE

Pittsburgh, railroad	$31.00 to 32.00
Pittsburgh, agricultural	29.00 to 30.00
Chicago, railroad	26.00 to 26.50
Chicago, agricultural	25.50 to 26.00
Eastern Pennsylvania, railroad	27.00 to 28.00
Cleveland, railroad	31.00 to 32.00
Cleveland, agricultural	26.00 to 27.00
St. Louis, railroad	21.00 to 21.50
St. Louis, agricultural	20.00 to 20.50
Cincinnati, railroad	29.00
Cincinnati, agricultural	28.00 to 29.00
Boston, railroad	25.00 to 26.00
Buffalo	29.00 to 30.00
Detroit	21.00 to 22.00

Miscellaneous Scrap

REROLLING RAILS
5 feet and over

Pittsburgh district	$37.00 to 38.00
Chicago	30.00 to 32.00
Eastern Pennsylvania	34.00 to 35.00
Cleveland	33.00 to 34.00
St. Louis	30.00 to 30.50
Birmingham	30.00 to 31.00
Boston (dealers)	30.00 to 31.00

LOCOMOTIVE TIRES

Chicago	$16.50 to 17.00
St. Louis	17.00 to 17.50

BOILER PUNCHINGS

Chicago	$24.50 to 25.00
Eastern Pennsylvania	27.00 to 28.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

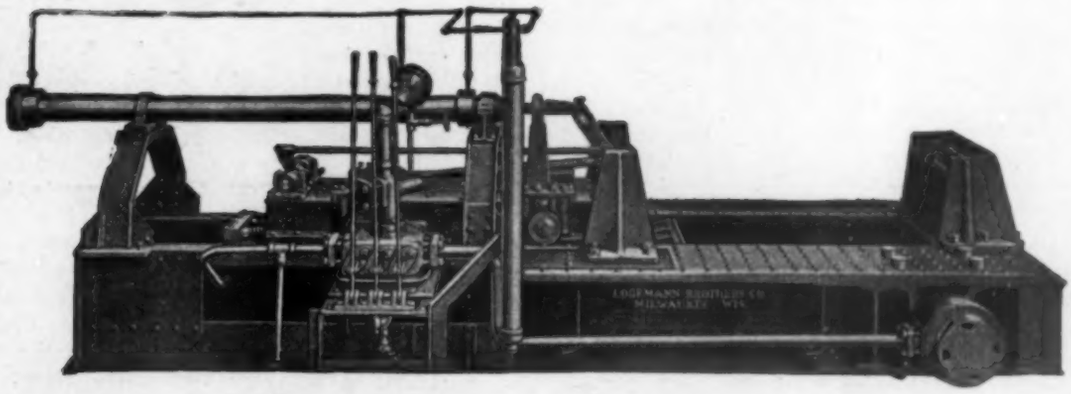
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

WELDING AND CUTTING.—The Bastian-Blessing Co., Chicago, has published a 36-page illustrated booklet in which welding and cutting equipment is described and illustrated in detail.

CONVEYOR.—The Godfrey Conveyor Co., Elkhart, Ind., has published a 16-page illustrated booklet in which an overhead conveying system for the transportation of coal is described and illustrated.

BUCKETS.—A small colored folder containing a discussion of lever arms, rated capacities and S-bends, as applied to clamshell buckets, is being circulated by the Blaw-Knox Co., Pittsburgh.

CHARGING EQUIPMENT.—The Cutler-Hammer Mfg. Co., Milwaukee, has published an 8-page illustrated bulletin in which charging equipment for miner's lamp batteries is described and illustrated.

PNEUMATIC TOOLS.—A 4-page illustrated folder has been issued by the Independent Pneumatic Tool Co., Chicago, in which pneumatic tools are illustrated. These include air drills, hammers, motor hoists, etc.

STEEL MILL CONTROL.—A booklet of 48 pages has been published by the Cutler-Hammer Mfg. Co., Milwaukee, containing a discussion of some of the problems involved and a description of apparatus used in solving the problems encountered in the control of motor-driven steel mill machinery. The booklet is replete with illustrations showing various control panels.

VENTILATORS.—The Merchant & Evans Co., Philadelphia, is circulating a 20-page illustrated bulletin in which metal ventilators for use on industrial structures and other buildings are described and illustrated.

STEEL BUILDINGS.—Industrial steel buildings of the standardized type are described and illustrated in a folder being circulated by the Steel Fabricating Corp., Harvey, Ill. These buildings are furnished in three types.

SAND TEMPERING.—The American Foundry Equipment Co., which has been merged with the Whiting Corp., New York, is circulating an illustrated booklet in which the use of sand cutting machines in a malleable foundry is described.

POWER TRANSMISSION MACHINERY.—The A. & F. Brown Co., Elizabethport, N. J., is circulating a 130-page illustrated booklet in which power transmission machinery and equipment are described and illustrated. Full data and specifications are given.

CRANES.—Electric traveling cranes, bridge and gantry cranes, hand power cranes, pillar and jib cranes, etc., are described and illustrated in a 32-page illustrated booklet recently published by the Northern Engineering Works, Detroit.

MOLDING MACHINE.—The Whiting Corp., New York, is circulating a 16-page illustrated booklet in which molding machines are described and illustrated. These machines are of the one man, hand and foot operated type and require no power and no special skill to operate, according to the booklet.

ARC WELDING.—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has published a 24-page bulletin, containing a number of treatises on the analysis of arc welding principles and processes. The treatises are reprints from various technical papers and magazines.

CLAMSHELL BUCKETS.—A type of clamshell bucket designed to meet the requirements of steel works in handling broken slag, limestone and hard ores, is described and illustrated in a folder being circulated by the Blaw-Knox Co., Pittsburgh. The folder gives specifications, etc.

ELECTRIC HOIST.—A cardboard folder is being circulated by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., in which electric hoists for the handling of heavy material are described and illustrated. These hoists may be either controlled from the floor or from a cage.

Business Changes Recently Announced by the Trade

FOR the purpose of affording better facilities for eastern foundrymen to secure their foundry supplies, the S. Obermayer Co., Chicago, Cincinnati and Pittsburgh, manufacturer of foundry supplies, furnace cement, etc., has established a branch office and warehouse at Blanchard and Ferry streets, Newark, N. J., with H. E. Beckman, formerly of Chicago in charge. G. H. Steinmetz is eastern sales manager.

* * *

The Union Chain Co., Seville, O., has removed to Lodi, O., and is to be reorganized with a capital of $300,000.

* * *

The Joseph O'Neill Wire Works has removed its office from Southport, Conn., to Port Chester, N. Y., where it will be better equipped for handling its business.

* * *

Allerton Foundry Co., Niles, Mich., capitalized at $50,000, has purchased the plant of the Tate Mfg. Co., for use in the manufacture of gray iron castings. O. R. Allerton is president.

* * *

The Eastern Fuel Co., affiliated with the Reilly-Peabody Fuel Co., Pittsburgh, with executive offices in the Frick building has opened sales offices in the Union arcade, Pittsburgh.

* * *

The Goyer Co., Inc., Hartford, Conn., maker of electrical hardware and latch knitting needles, is moving its factory to Willimantic, Conn., having taken over the lease held by the Poster-Stewart Co. of the old Turner silk mill.

* * *

The Salem Mfg. Co., Naugatuck, Conn., a $100,000 corporation, and the Ludington Cigarette Machine Co., Waterbury, Conn., have filed final certificates of dissolution, and the United States Electric Co., New London, Conn., a preliminary certificate of dissolution, with the secretary of state.

* * *

The Detroit branch office of the Wetmore Reamer Co., Milwaukee, has formed a new company to handle the sale of that company's expanding reamers in Michigan, exclusive of the northern peninsula. James J. Ward has resigned as assistant sales manager of the Wetmore company to become one of the three members of the new firm, known as the Wayman-Taylor-Ward Co. Messrs. Wayman and Taylor previously have handled this work. The location of the offices have been changed to 403 Real Estate Exchange building, Detroit.

* * *

The Combustion Engineering Corp., 11 Broadway, New York, has acquired control of the business of the Pulverized Fuel Equipment Corp., formerly located at 30 Church street, New York. The Combustion company now is able to offer stokers as well as special systems of pulverized fuel equipment. It takes over the entire organization of the Pulverized Fuel Equipment Corp., including V. Z. Caracristi as consulting engineer.

* * *

The Ericksen Pattern & Mfg. Co., Beaver Dam, Wis., now is owned by and is under the active management of James Ericksen and J. A. Schauer, who have acquired the one-third interest of C. L. Larson, one of the founders of the company. The principal products are wood and metal patterns and other supplies for the foundry molding floor.

AIRCO

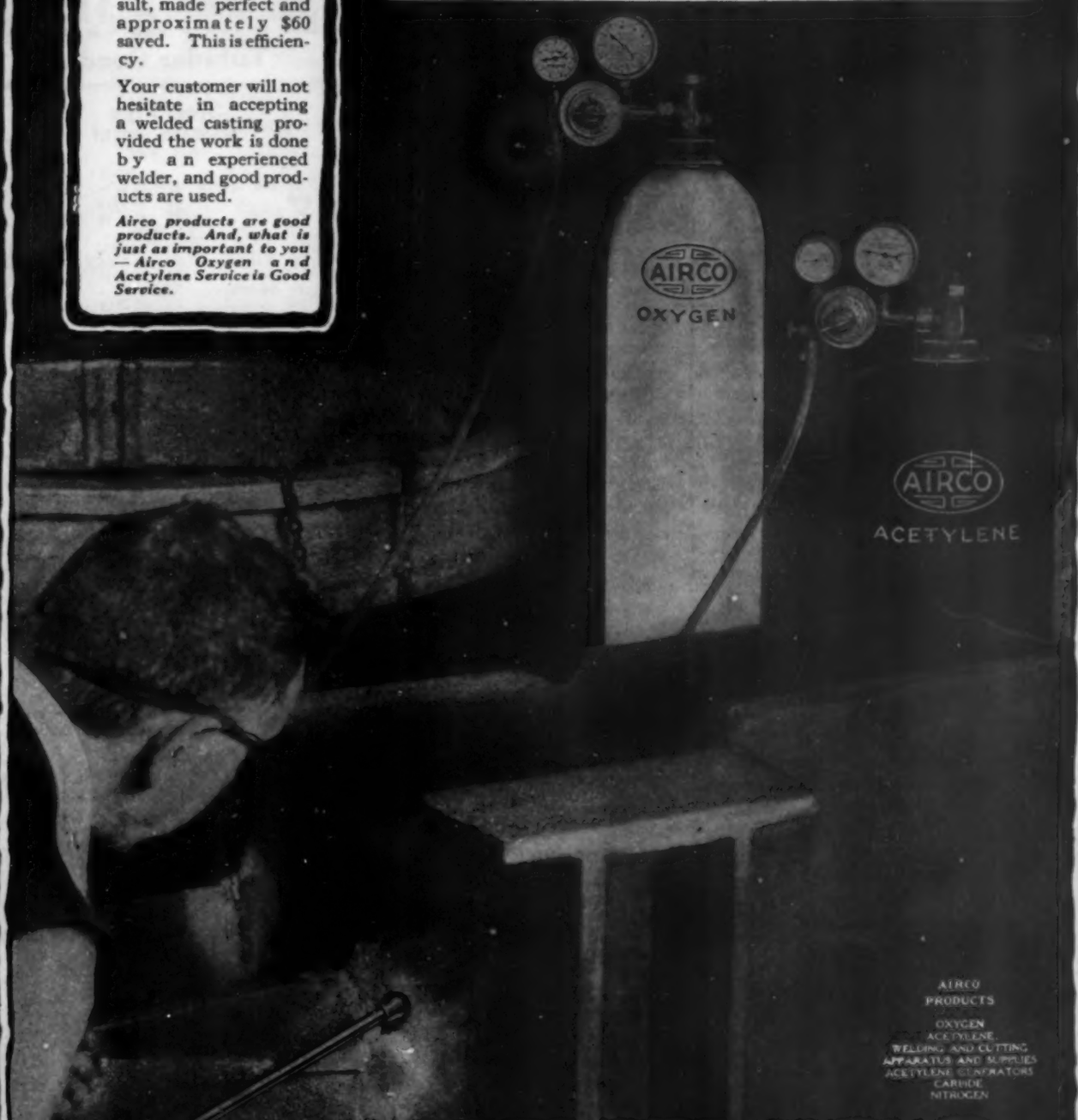
Casting of a Grinding Wheel Frame

Cracked in cooling. Could have been scrapped, but was welded instead. Result, made perfect and approximately $60 saved. This is efficiency.

Your customer will not hesitate in accepting a welded casting provided the work is done by an experienced welder, and good products are used.

Airco products are good products. And, what is just as important to you — Airco Oxygen and Acetylene Service is Good Service.

AIRCO OXYGEN
AIRCO ACETYLENE
AIRCO SERVICE



AIRCO PRODUCTS

OXYGEN
ACETYLENE
WELDING AND CUTTING APPARATUS AND SUPPLIES
ACETYLENE GENERATORS
CARBIDE
NITROGEN

AIR REDUCTION COMPANY, INC
NEW YORK

AIRCO SERVICE—A DISTRIBUTING STATION NEAR EVERY AIRCO USER

Iron and Steel Prices

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 per cent iron	$7.45
Mesabi Bessemer, 55 per cent iron	7.20
Old range nonbessemer, 51½ per cent iron	6.70
Mesabi nonbessemer, 51½ per cent iron	6.55

Port Henry Iron Ore, f.o.b. Port Henry

Old bed 21 furnace	$5.80
Old bed concentrates, 63 per cent	6.70
Harmony, cobbed, 63 per cent	6.70
New bed, low phos., 65 per cent	9.50
Lump ore for fix	7.00

Manganese Ore

Brazilian, 48 to 50 per cent, c.i.f. Atlantic ports, 50 cents per unit, nominal.

Indian 48 to 50 per cent. c.i.f. Atlantic Atlantic ports, 60 cents per unit, nominal.

FLUOR SPAR

Washed gravel Kentucky and Illinois mines, per ton $35.00

Warehouse Prices

Steel bars, Boston	5.50c to 6.00c
Steel bars, Chicago	3.48c to 3.98c
Steel bars, Cleveland	3.34c to 4.00c
Steel bars, Detroit	4.485c
Steel bars, Philadelphia	4.75c
Steel bars, New York	4.75c
Steel bars, St. Louis	3.57½ to 4.07½
Steel bars, Cincinnati	5.00c to 6.00c
Steel bars, St. Paul	3.76c to 4.50c
Steel bars, Buffalo	4.65c
Iron bars, Boston	5.50c
Iron bars, Buffalo	5.26c
Iron bars, Chicago	3.98c to 4.61c
Iron bars, Detroit	4.485c
Iron bars, St. Louis	4.07½c to 4.50c
Iron bars, Cincinnati	4.50c
Iron bars, Philadelphia	5.50c
Iron bars, New York	4.75c to 5.00c
Shapes, Chicago	3.58c to 4.08c
Shapes, Detroit	4.18c
Shapes, Boston	5.00c
Shapes, St. Louis	3.67½c to 4.17½c
Shapes, St. Paul	3.86c to 4.385c
Shapes, New York	4.30c to 5.00c
Shapes, Cleveland	3.44c
Shapes, Philadelphia	4.50c
Shapes, Buffalo	4.15c
Shapes, Cincinnati	4.50c
Plates, Buffalo	4.30c
Plates, Chicago	3.78c to 4.28c
Plates, Detroit	4.33c
Plates, Boston	4.75c to 5.50c
Plates, St. Louis	3.875c to 4.375c
Plates, St. Paul	4.06c to 4.865c
Plates, New York	4.50c to 4.75c
Plates, Cleveland	3.64c
Plates, Phila.	4.50c
Plates, Cincinnati	6.00c
No. 10 blue anl. sheets, N. Y.	7.00c to 7.50c
No. 10 blue anl. sheets, Phila.	7.25c
No. 10 blue anl. sheets, Chicago	4.68c to 7.13c
No. 10 blue anl. sheets, Cleveland	6.75c
No. 10 blue anl. sheets, Boston	7.80c
No. 10 blue anl. sheets, Buffalo	7.15c
No. 10 blue anl. sheets, Detroit	6.95c
No. 10 blue anl. sheets, St. L.	4.77½c to 7.22½c
No. 10 blue anl. sheets, Cincinnati	7.50c
No. 10 blue anl. sheets, St. Paul	7.25c
No. 28 black sheets, Chicago	5.73c to 8.11c
No. 28 black sheets, New York	8.60c to 9.00c
No. 28 black sheets, Phila.	9.00c
No. 28 black sheets, Cleveland	6.75c to 8.50c
No. 28 black sheets, Boston	9.15c
No. 28 black sheets, Cincinnati	9.00c
No. 28 black sheets, Detroit	8.00c
No. 28 black sheets, St. Louis	8.20c
No. 28 black sheets, St. Paul	6.00c to 8.39c
No. 28 black sheets, Buffalo	9.10c
No. 28 galv. sheets, Chicago	9.61c
No. 28 galv. sheets, New York	9.85c to 10.50c
No. 28 galv. sheets, Phila.	11.00c
No. 28 galv. sheets, Boston	10.50c
No. 28 galv. sheets, Cleveland	9.00c to 9.50c
No. 28 galv. sheets, Cincinnati	9.00c
No. 28 galv. sheets, Detroit	10.00c
No. 28 galv. sheets, Buffalo	10.60c
No. 28 galv. sheets, St. Louis	9.60c
Bands, New York	6.45c to 7.11c
Bands, Boston	8.00c
Bands, Detroit	5.785c
Bands, Buffalo	6.35c
Hoops, Buffalo	6.60c
Hoops, Boston	9.00c
Hoops, New York	6.68c to 7.61c
Hoops, Detroit	6.535c
Cold rolled shafting, Buffalo	6.00c
Cold Rolled Shafting, New York	6.36c to 8.11c
Cold rolled shafting, Boston	8.00
Cold rolled flats, squares and hexagons, New York	6.86c to 8.61c
Cold rolled rounds	6.36c to 8.11c
Cold rolled rounds, Detroit	5.70c

Mill Sheet Schedule

Black

Differentials for gage, per 100 pounds

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Freight Rates

Effective Aug. 26 but subject to revision by official tariffs

PIG IRON

Mahoning and Shenango valleys to:

Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
St. Louis	6.44
Minneapolis, St. Paul	7.60

Buffalo to:

Albany, N. Y.	$2.53
New England (rail)	5.46
New York and Brooklyn (rail)	5.46

Virginia furnaces to:

Philadelphia	$5.74
New England	6.26½
Brooklyn, Jersey City, Newark	6.16

Birmingham, Ala., to:

Boston	$10.665
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.26
Philadelphia	8.665
Pittsburgh	7.00
Savannah, Ga.	4.25
St. Louis	5.375

Chicago to:

Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	.80
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.725

Ironton and Jackson, O., to:

Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

FINISHED MATERIAL

Pittsburgh, carloads, per 100 lbs., to:

New York	38.0 cents
Philadelphia	35.0 cents
Boston	41.5 cents
Buffalo	29.5 cents
Baltimore	33.5 cents
Cleveland	24.0 cents
Cincinnati	32.0 cents
Chicago	38.0 cents
Detroit	32.0 cents
Minneapolis and St. Paul	66.0 cents
Denver	$1.32
St. Louis	47½ cents
New Orleans	51.5 cents
Birmingham	76.5 cents
Pacific coast (all rail)	$1.665
Pacific coast (tin plate)	1.665

GALVANIZED AND LONG TERNE

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	+15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

BLUE ANNEALED

Differential for gage for 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Pittsburgh basing discounts to jobbers in carloads.

Steel Pipe

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch	47 to 50½	20½ to 24
½-inch	51 to 54½	36½ to 40
¾ to 3-inch	54 to 57½	40½ to 44

Lap Weld

2-inch	47 to 50½	34½ to 38
2½ to 6-inch	50 to 53½	37½ to 41
7 to 12-inch	47 to 50½	33½ to 37
13 to 14-inch	37½ to 41	
15-inch	35 to 38½	

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	52 to 55½	38½ to 42

Lap Weld

2-inch	45 to 48½	32½ to 36
2½ to 6-inch	48 to 51½	35½ to 39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	43 to 46½	25½ to 29
½-inch	48 to 51½	35½ to 39
¾ to 1¼-inch	52 to 55½	39½ to 43
2 to 3-inch	53 to 56½	40½ to 44

Lap Weld

2-inch	45 to 48½	33½ to 37
2½ to 4-inch	48 to 51½	36½ to 40
4½ to 6-inch	47 to 50½	35½ to 39
7 to 8-inch	43 to 46½	29½ to 33
9 to 12-inch	38 to 41½	24½ to 28

DOUBLE EXTRA STRONG PLAIN

	Butt Weld	
½-inch	39 to 42½	28½ to 32
¾ to 1¼-inch	42 to 45½	31½ to 35
2 to 2½-inch	44 to 47½	33½ to 37

Lap Weld

2-inch	37 to 40½	27½ to 31
2½ to 4-inch	39 to 42½	29½ to 33
4½ to 6-inch	38 to 41½	28½ to 32
7 to 8-inch	33 to 36½	19½ to 23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

¼-inch	+	35
⅜-inch	15½ to 25½	+ 1½ to 11½
½-inch	19½ to 29½	1½ to 11½
¾ to 1¼-inch	24½ to 34½	8 to 18½

Lap Weld

2-inch	20½ to 28½	6½ to 14½
2½ to 6-inch	22½ to 30½	9½ to 17½
7 to 12-inch	19½ to 27½	6½ to 14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galvanized
¼-inch	+ 9	+ 35
⅜-inch	13½ to 23½	6½ to +3½
½-inch	18½ to 28½	5½ to 15½
¾ to 1¼-inch	24½ to 34½	9½ to 19½

Lap Weld

2-inch	21½ to 29½	8½ to 16½
2½ to 4-inch	23½ to 31½	11½ to 19½
4½ to 6-inch	22½ to 30½	10½ to 18½
7 and 8-inch	14½ to 22½	2½ to 10½
9 and 12-inch	9½ to 17½	5½ to +2½

DOUBLE EXTRA STRONG, PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	15½ to +39½	3½ to +51½
¾-inch	30½ to +22½	8½ to +34½
1-inch	+32½	+50½
1¼-inch	+22½	+34½
1½-inch	+21½	+33½

Lap Weld

2-inch	16½ to + 7½	4½ to +10½
2½ to 4-inch	18½ to + 2½	6½ to +11½